OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▶ 1

To	From
LORI HOLCIK	GINA BELT
Dept./Agency	Phone #
Fax #	Fax #

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

LODGED

OCT 09 1997

FILED

JAN 26 1998

UNITED STATES DISTRICT COURT
DISTRICT OF ALASKA
By _____ Deputy

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF ALASKA

UNITED STATES OF AMERICA,

Plaintiff,

v.

ALASKA RAILROAD CORPORATION, CHUGACH ELECTRIC ASSOCIATION, INC., WESTINGHOUSE ELECTRIC CORPORATION, SEARS, ROEBUCK AND COMPANY, MONTGOMERY WARD AND COMPANY, INC. J.C. PENNEY COMPANY, INC., AND BRIDGESTONE/FIRESTONE, INC.,

Defendants.

CIVIL ACTION NO.
A91-0589-CV (JWS)

CERCLA REMEDIAL DESIGN AND REMEDIAL ACTION CONSENT DECREE

91414 17

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF ALASKA

UNITED STATES OF AMERICA, Plaintiff, v. ALASKA RAILROAD CORPORATION, CHUGACH ELECTRIC ASSOCIATION, INC., WESTINGHOUSE ELECTRIC CORPORATION, SEARS, ROEBUCK AND COMPANY, MONTGOMERY WARD AND COMPANY, INC. J.C. PENNEY COMPANY, INC., AND BRIDGESTONE/FIRESTONE, INC., Defendants.	CIVIL ACTION NO. A91-0589-CV (JWS)

CERCLA REMEDIAL DESIGN AND REMEDIAL ACTION CONSENT DECREE

TABLE OF CONTENTS

I. BACKGROUND

A. The United States of America ("United States"), on behalf of the Administrator of the United States Environmental Protection Agency ("EPA"), filed a complaint in this matter on December 6, 1991, pursuant to Sections 104, 107, and 113 of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. §§ 9604, 9607, 9613.

B. Simultaneously with the lodging of this CERCLA Remedial Design and Remedial Action Consent Decree ("Consent Decree"), the United States has filed an amended complaint in this matter pursuant to Sections 106, 107, and 113 of CERCLA, 42 U.S.C. §§ 9606, 9607, and 9613.

C. The United States in its amended complaint seeks, inter alia: (1) reimbursement of costs incurred by EPA and the Department of Justice for response actions at the Standard Steel and Metals Salvage Yard Superfund Site ("Site") in the Municipality of Anchorage, Alaska, together with accrued interest, if any; and (2) performance of studies and response actions by the defendants at the Site consistent with the National Oil and Hazardous Substance Pollution Contingency Plan, 40 C.F.R. Part 300 (as amended) ("NCP").

D. In accordance with the NCP and Section 121(f)(1)(F) of CERCLA, 42 U.S.C. § 9621(f)(1)(F), EPA notified the State of Alaska (the "State") on November 6, 1996, of negotiations with potentially responsible parties regarding the implementation of the remedial design and remedial action for the

Site, and EPA has provided the State with an opportunity to participate in such negotiations and be a party to this Consent Decree.

E. In accordance with Section 122(j)(1) of CERCLA, 42 U.S.C. § 9622(j)(1), EPA notified the U.S. Department of the Interior and the National Oceanic and Atmospheric Administration on November 6, 1996, and the Alaska Department of Environmental Conservation on November 13, 1996, of negotiations with potentially responsible parties regarding the release of hazardous substances that may have resulted in injury to the natural resources under Federal and State trusteeship, and encouraged the trustees to participate in the negotiation of this Consent Decree.

F. The defendants that have entered into this Consent Decree ("Settling Defendants and Owner Settling Defendant") do not admit any liability to the Plaintiff arising out of the transactions or occurrences alleged in the amended complaint, nor do they acknowledge that the release or threatened release of hazardous substances at or from the Site constitutes an imminent or substantial endangerment to the public health or welfare or the environment.

G. Pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the Site on the National Priorities List ("NPL"), set forth at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register on August 30, 1990, 55 Fed. Reg. 35502.

H. In response to a release or a substantial threat of a release of a hazardous substance at or from the Site, Defendant Chugach Electric Association, Inc. performed a Remedial Investigation and Feasibility Study ("RI/FS") for the Site pursuant to 40 C.F.R. § 300.430 under an Administrative Order on Consent, Docket Nos. 1091-07-02-107 and 1091-07-01-120, dated September 25, 1992, as amended on July 6 and October 24, 1994, and by the Partial Consent Decree, entered by the Court on December 11, 1996 ("AOC").

I. Pursuant to the AOC, Defendant Chugach Electric Association, Inc. completed a Remedial Investigation ("RI") Report in August of 1994, and a Feasibility Study ("FS") Report in January of 1996.

J. Some of the Defendants alleged, in response to the original complaint, that certain federal agencies and instrumentalities are among the classes of persons identified in Section 107(a) of CERCLA as liable for response costs incurred with respect to the Site. These federal agencies and instrumentalities (the "Federal PRPs") reimbursed to Chugach 75% of the costs of performing the RI/FS. In addition, pursuant to the Partial Consent Decree, defined at Section IV, Paragraph N. below, the Federal PRPs are obligated to fund 61.50% of all Future Costs, as defined in Paragraph 3.n. of the Partial Consent Decree, which includes the costs of performing the Work (defined in Paragraph 4 below) and other costs.

K. Pursuant to Section 117 of CERCLA, 42 U.S.C. § 9617, EPA published notice of the completion of the FS and of the proposed plan for remedial action on March 18, 1996, in a major local newspaper of general circulation. EPA provided an opportunity for written and oral comments from the public on the proposed plan for remedial action. A copy of the transcript of the public meeting is available to the public as part of the administrative record upon which the Regional Administrator based the selection of the response action.

L. The decision by EPA on the remedial action to be implemented at the Site is embodied in a final Record of Decision ("ROD"), executed on July 16, 1996, on which the State has given its concurrence. The ROD includes EPA's explanation for any significant differences between the final plan and the proposed plan as well as a responsiveness summary to the public comments. Notice of the final plan was published in accordance with Section 117(b) of CERCLA, 42 U.S.C. § 9617(b).

M. Based on the information presently available to EPA, EPA believes that the Work and Institutional Controls (defined in Paragraph 4 below) will be properly and promptly conducted by the Settling Defendants and Owner Settling Defendant, if conducted in accordance with the requirements of this Consent Decree and its appendices.

N. Solely for the purposes of Section 113(j) of CERCLA, 42 U.S.C. § 9613(j), the Remedial Action selected by the ROD and the Work to be performed by the Settling Defendants and

the Institutional Controls to be implemented by Owner Settling Defendant shall constitute response actions taken or ordered by the President.

O. The Parties recognize, and the Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith and implementation of this Consent Decree will expedite the cleanup of the Site and will avoid prolonged and complicated litigation between the Parties, and that this Consent Decree is fair, reasonable, and in the public interest.

NOW, THEREFORE, it is hereby Ordered, Adjudged, and Decreed:

II. JURISDICTION

1. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1345, and 42 U.S.C. §§ 9606, 9607, and 9613(b). This Court also has personal jurisdiction over the Settling Defendants and Owner Settling Defendant. Solely for the purposes of this Consent Decree and the underlying amended complaint, Settling Defendants and Owner Settling Defendant waive all objections and defenses that they may have to jurisdiction of the Court or to venue in this District. The Parties shall not challenge the terms of this Consent Decree or this Court's jurisdiction to enter and enforce this Consent Decree.

III. PARTIES BOUND

2. This Consent Decree applies to and is binding upon the Parties and their agents, successors, and assigns. Any change in ownership or corporate status of a Settling Defendant or Owner Settling Defendant, including, but not limited to, any transfer of assets or real or personal property, shall in no way alter such Settling Defendant's or Owner Settling Defendant's responsibilities under this Consent Decree.

3. Settling Defendants shall provide a copy of this Consent Decree to each contractor hired to perform the Work (as defined in Paragraph 4 below) required by this Consent Decree and to each person representing any Settling Defendant with respect to the Site or the Work, and shall condition all contracts entered into hereunder upon performance of the Work in conformity with the terms of this Consent Decree. If Owner Settling Defendant hires a contractor or outside party to perform Institutional Controls, it shall provide such contractor or outside party with a copy of this Consent Decree and shall condition all contracts entered into hereunder upon performance of the Institutional Controls in conformity with the terms of this Consent Decree. Settling Defendants and, if applicable, Owner Settling Defendant or their contractors shall provide written notice of the Consent Decree to all subcontractors hired to perform any portion of the Work or Institutional Controls required by this Consent Decree. Settling Defendants and, if applicable, Owner Settling Defendant shall nonetheless be

responsible for ensuring that their contractors and subcontractors perform the Work or Institutional Controls contemplated herein in accordance with this Consent Decree. With regard to the activities undertaken pursuant to this Consent Decree, each contractor and subcontractor hired by Settling Defendants or Owner Settling Defendant shall be deemed to be in a contractual relationship with the Settling Defendants or Owner Settling Defendant, respectively, within the meaning of Section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3).

IV. DEFINITIONS

4. Unless otherwise expressly provided herein, terms used in this Consent Decree which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Consent Decree or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

A. "ADEC" shall mean the Alaska Department of Environmental Conservation and any successor departments or agencies of the State;

B. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601 et seq.;

C. "Consent Decree" or "Decree" shall mean this CERCLA Remedial Design and Remedial Action Consent Decree and all

appendices attached hereto (listed in Section XXIX). In the event of conflict between this Decree and any appendix, this Decree shall control;

D. "Day" shall mean a calendar day unless expressly stated to be a working day. "Working day" shall mean a day other than a Saturday, Sunday, or Federal holiday. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day;

E. "EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States;

F. "Federal PRPs" shall mean the Department of Transportation (including the Federal Railroad Administration), the Department of Defense (including the Defense Logistics Agency, the Defense Reutilization and Marketing Service, and the Army & Air Force Exchange Service), and any successor agencies, departments or instrumentalities of the United States.

G. "Future Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States (excluding for this purpose, the Federal PRPs) incurs in reviewing or developing plans, reports and other items pursuant to this Consent Decree, verifying the Work and all Institutional Controls, or otherwise implementing, overseeing, or enforcing this Consent Decree, including, but not limited to, payroll costs, contractor costs, travel costs, laboratory costs,

the costs incurred pursuant to Sections VII, IX (including, but not limited to, the cost of attorney time and any monies paid to secure access and/or to secure or implement Institutional Controls, including, but not limited to, the amount of just compensation), XV, XI, and Paragraph 84 of Section XXI, minus $53,665.18. Future Response Costs shall include all interim response costs pursuant to 42 U.S.C. § 9607(a) paid or incurred but not yet paid by the United States in connection with the Site as follows: (1) for EPA, on or after July 16, 1996, and prior to the Effective Date of this Consent Decree, as defined in Section XXVII below, and incurred for site ID 102P; and (2) for the U.S. Department of Justice, Environmental Enforcement Section of the Environment and Natural Resources Division, incurred after December 11, 1996, and prior to the Effective Date of this Consent Decree, as defined in Section XXVII below, and billed to DOJ File No. 90-11-3-810;

H. "Institutional Controls" shall mean land and water use restrictions and access restrictions identified in the ROD, including, but not limited to, restrictions in the form of contractual agreements, restrictive covenants that run with the land, and governmental controls.

I. "Interest" shall mean interest at the rate specified for interest on investments of the Hazardous Substance Superfund established under Subchapter A of Chapter 98 of Title 26 of the U.S. Code, compounded on October 1 of each year, in accordance with 42 U.S.C. § 9607(a);

J. "National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto;

K. "Operation and Maintenance" or "O&M" shall mean all activities required to maintain the effectiveness of the Remedial Action as provided in the ROD and required under the Operation and Maintenance Plan approved or developed by EPA pursuant to this Consent Decree and the Statement of Work (SOW);

L. "Owner Settling Defendant" shall mean the Alaska Railroad Corporation, and any successor agency, department, or corporation;

M. "Paragraph" shall mean a portion of this Consent Decree identified by an arabic numeral or an upper case letter;

N. "Partial Consent Decree" shall mean the Partial Consent Decree lodged in this Civil Action No. A91-0589-CV (JWS) on October 9, 1996, and entered on December 11, 1996, and in which Settling Defendants, Defendant Montgomery Ward and Company, Inc., Owner Settling Defendant, and the Federal PRPs agreed, among other things, to: (1) reimburse the United States for Past Costs, DOJ Enforcement Costs, and Oversight Costs, as those terms are defined in the Partial Consent Decree; and (2) in which the Federal PRPs and the Owner Settling Defendant collectively agreed to fund sixty-four percent (64%) of Future Costs as that term is defined in the Partial Consent Decree;

O. "Parties" shall mean the United States, the Settling Defendants, and Owner Settling Defendant;

P. "Performance Standards" shall mean the cleanup standards and other measures of achievement of the goals of the Remedial Action, set forth in Section 9.0 of the ROD and Sections 2.0 and 3.0 of the SOW;

Q. "Plaintiff" shall mean the United States;

R. "RCRA" shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901 et seq. (also known as the Resource Conservation and Recovery Act);

S. "Record of Decision" or "ROD" shall mean the EPA Record of Decision relating to the Site signed on July 16, 1996, by the Regional Administrator, EPA Region 10, and all attachments thereto. The ROD is attached as Appendix A;

T. "Remedial Action" shall mean those activities, including implementation of access and Institutional Controls, but excluding Operation and Maintenance, to be undertaken by the Settling Defendants and Owner Settling Defendant pursuant to this Consent Decree to implement the ROD, in accordance with the SOW and the final Remedial Design and Remedial Action Work Plans and other plans approved by EPA under this Consent Decree;

U. "Remedial Action Work Plan" shall mean the document developed pursuant to Paragraph 12 of this Consent Decree and approved by EPA, and any amendments thereto;

V. "Remedial Design" shall mean those activities to be undertaken by the Settling Defendants to develop the final

plans and specifications for the Remedial Action pursuant to the Remedial Design Work Plan;

W. "Remedial Design Work Plan" shall mean the document developed pursuant to Paragraph 11 of this Consent Decree and approved by EPA, and any amendments thereto;

X. "Section" shall mean a portion of this Consent Decree identified by a Roman numeral;

Y. "Settling Defendants" shall mean Chugach Electric Association, Inc., Westinghouse Electric Corporation, Sears, Roebuck and Company, J.C. Penney Company, Inc., and Bridgestone/Firestone, Inc.;

Z. "Site" shall mean the Standard Steel and Metals Salvage Yard Superfund Site, located at 2400 Railroad Avenue, in the Municipality of Anchorage, Alaska, and more specifically described in the legal description attached as Appendix C, which may be amended after the remedial action is constructed. The Site is also depicted generally on the map attached as Appendix D;

aa. "State" shall mean the State of Alaska;

bb. "Statement of Work" or "SOW" shall mean the statement of work for implementation of the Remedial Design, Remedial Action, and Operation and Maintenance at the Site, as set forth in Appendix B to this Consent Decree, and any modifications of it made in accordance with this Consent Decree;

cc. "Supervising Contractor" shall mean the principal contractor retained by the Settling Defendants to supervise and direct the implementation of the Work under this Consent Decree;

dd. "Supplemental Institutional Controls" shall mean institutional controls, other than those required pursuant to this Consent Decree and identified in the ROD, that are developed, requested, or approved by EPA for one or more of the following purposes: (1) to ensure non-interference with the performance, operation and maintenance of any response actions at or pertaining to the Site, other than the remedy selected in the ROD; (2) to ensure the integrity and effectiveness of any response actions at or pertaining to the Site, other than the remedy selected in the ROD; and (3) to otherwise ensure the protection of public health, welfare, or the environment at and in connection with the Site.

ee. "United States" shall mean the United States of America;

ff. "Waste Material" shall mean (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); or (3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27); and

gg. "Work" shall mean all activities Settling Defendants are required to perform under this Consent Decree, except those required by Section XXV (Retention of Records). Work shall not mean the Institutional Controls that Owner Settling Defendant is agreeing to perform and implement pursuant to Section IX. of this Consent Decree.

V. GENERAL PROVISIONS

5. Objectives of the Parties

The objectives of the Parties in entering into this Consent Decree are: (1) to protect public health or welfare or the environment at the Site by the performance of the Remedial Design and Remedial Action at the Site and the performance of O&M at the Site; (2) the reimbursement of Future Response Costs of the Plaintiff; and (3) the resolution of the claims of Plaintiff against Settling Defendants and Owner Settling Defendant as provided in this Consent Decree.

6. Commitments by Settling Defendants and Owner Settling Defendant.

a. Settling Defendants shall perform the Work in accordance with this Consent Decree, the ROD, the SOW, and all Work Plans and other plans, standards, specifications, and schedules set forth herein or developed by Settling Defendants and approved by EPA pursuant to this Consent Decree. Settling Defendants shall also reimburse the United States for Future Response Costs as provided in this Consent Decree.

b. The obligations of Settling Defendants to perform the Work under this Consent Decree are joint and several. In the event of the insolvency or other failure of any one or more Settling Defendants to implement the requirements of this Consent Decree, the remaining Settling Defendants shall complete all such requirements (without waiving any rights such remaining Settling Defendants may have against the defaulting Settling Defendant or

its successors or assigns). Nonpayment by any person, including the Federal PRPs, shall not be a defense to nonperformance of any provision of this Consent Decree that Settling Defendants or Owner Settling Defendant are required to perform.

c. Owner Settling Defendant shall finance and perform Institutional Controls, including title notices, site use and access restrictions, that are contained in Section IX of this Consent Decree and are required by the ROD and SOW.

7. Compliance With Applicable Law

All activities undertaken by Settling Defendants pursuant to this Consent Decree shall be performed in accordance with the requirements of all applicable federal and state laws and regulations. Settling Defendants also must comply with all applicable or relevant and appropriate requirements of all Federal and state environmental laws as set forth in the ROD and the SOW. The activities conducted pursuant to this Consent Decree, if approved by EPA, shall be considered to be consistent with the NCP.

8. Permits

a. As provided in Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), and Section 300.400(e) of the NCP, no permit shall be required for any portion of the Work conducted entirely on-Site (i.e., within the areal extent of contamination or in very close proximity to the contamination and necessary for implementation of the Work). Where any portion of the Work that is not on-Site requires a federal or state permit or approval, Settling

Defendants shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals.

b. The Settling Defendants may seek relief under the provisions of Section XVIII (Force Majeure) of this Consent Decree for any delay in the performance of the Work resulting from a failure to obtain, or a delay in obtaining, any permit required for the Work.

c. This Consent Decree is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

9. Nothing in this Consent Decree is intended to alter or otherwise affect the provisions or terms of the Partial Consent Decree.

VI. PERFORMANCE OF THE WORK BY SETTLING DEFENDANTS

10. Selection of Supervising Contractor.

a. All aspects of the Work to be performed by Settling Defendants pursuant to Sections VI (Performance of the Work by Settling Defendants), VII (Remedy Review), VIII (Quality Assurance, Sampling and Data Analysis), and XV (Emergency Response) of this Consent Decree shall be under the direction and supervision of the Supervising Contractor, the selection of which shall be subject to disapproval by EPA. Within ten (10) days after the lodging of this Consent Decree, Settling Defendants shall notify EPA, in writing, of the name, title, and

qualifications of any contractor proposed to be the Supervising Contractor. EPA will issue a notice of disapproval or an authorization to proceed. If at any time thereafter, Settling Defendants propose to change a Supervising Contractor, Settling Defendants shall give such notice to EPA and must obtain an authorization to proceed from EPA before the new Supervising Contractor performs, directs, or supervises any Work under this Consent Decree.

b. If EPA disapproves a proposed Supervising Contractor, EPA will notify Settling Defendants, in writing. Settling Defendants shall submit to EPA a list of contractors, including the qualifications of each contractor, that would be acceptable to them within thirty (30) days of receipt of EPA's disapproval of the contractor previously proposed. EPA will provide written notice of the names of any contractor(s) that it disapproves and an authorization to proceed with respect to any of the other contractors. Settling Defendants may select any contractor from that list that is not disapproved and shall notify EPA of the name of the contractor selected within twenty-one (21) days of EPA's authorization to proceed.

c. If EPA fails to provide written notice of its authorization to proceed or disapproval as provided in this Paragraph and this failure prevents the Settling Defendants from meeting one or more deadlines in a plan approved by the EPA pursuant to this Consent Decree, Settling Defendants may seek

relief under the provisions of Section XVIII (Force Majeure) hereof.

11. Remedial Design.

a. Within sixty (60) days after EPA's issuance of an authorization to proceed pursuant to Paragraph 9, Settling Defendants shall submit to EPA and the State a Work Plan for the design of the Remedial Action at the Site ("Remedial Design Work Plan" or "RD Work Plan"). The Remedial Design Work Plan shall provide for design of the remedy set forth in the ROD, in accordance with the SOW and for achievement of the Performance Standards and other requirements set forth in the ROD, this Consent Decree and/or the SOW. Upon its approval by EPA, the Remedial Design Work Plan shall be incorporated into and become enforceable under this Consent Decree.

b. The Remedial Design Work Plan shall include plans and schedules for implementation of all remedial design and pre-design tasks identified in the SOW. The Remedial Design Work Plan shall incorporate the approved Design Level Treatability Study Work Plan and schedule therefor and incorporate results of pre-design treatability studies, both of which were drafted and performed pursuant to the AOC, as amended. The Remedial Design Work Plan shall include, but not be limited to, plans and schedules for the completion of: (1) a Sampling and Analysis Plan (SAP); (2) a Quality Assurance Project Plan (QAPP); (3) a Field Sampling Plan (FSP); (4) a Construction Quality Plan; (5) a conceptual design of the landfill (which is required in the ROD

to meet requirements of the Toxics Substances and Control Act, 15 U.S.C. § 2601, ("TSCA") and future use of the facility or a process to incorporate the Owner Settling Defendant's planned future use of the Site; (6) a preliminary (30%) design submittal; and (7) pre-final (95%) and final (100%) design submittals. The Remedial Design Work Plan shall include a schedule for completion of the Remedial Action Work Plan. Together with the RD Work Plan, Settling Defendants shall submit a Health and Safety Plan for field design activities which conforms to the applicable Occupational Safety and Health Administration and EPA requirements including, but not limited to, 29 C.F.R. § 1910.120.

c. Upon approval of the Remedial Design Work Plan by EPA, after a reasonable opportunity for review and comment by the State, Settling Defendants shall implement the Remedial Design Work Plan. The Settling Defendants shall submit to EPA and the State all plans, submittals and other deliverables required under the approved Remedial Design Work Plan in accordance with the approved schedule for review and approval pursuant to Section XI (EPA Approval of Plans and Other Submissions). Unless otherwise directed or approved in writing by EPA, Settling Defendants shall not commence further Remedial Design activities at the Site prior to approval of the Remedial Design Work Plan.

d. The preliminary thirty percent (30%) design submittal shall include, at a minimum, the following: (1) preliminary plans, drawings, and sketches, including design criteria; (2) available results of treatability studies and

additional field sampling; (3) design assumptions and parameters, including design restrictions, process performance criteria, appropriate unit processes for the treatment train, design duration and leachate generation of the landfill; (4) proposed cleanup and treatment verification methods, including compliance with Applicable or Relevant and Appropriate Requirements (ARARs); (5) outline of required specifications; (6) proposed siting/location of treatment equipment/construction activity; (7) expected long-term monitoring and operation requirements; (8) preliminary construction schedule, including contracting strategy; and (9) conceptual future use of the site. Together with the preliminary (30%) design submittal, Settling Defendants shall submit a Health and Safety Plan for construction activities which conforms to the applicable Occupational Safety and Health Administration and EPA requirements including, but not limited to, 29 C.F.R. § 1910.120.

e. The pre-final ninety-five percent (95%) and final design one hundred percent (100%) submittal shall include, at a minimum, the following: (1) a draft Operation and Maintenance Plan; (2) a Capital and Operation and Maintenance Cost Estimate that revises the FS cost estimate; and (3) a final project schedule for the construction and implementation of the RA which identifies timing for initiation and completion of all critical path tasks.

12. Remedial Action.

a. Within thirty (30) days after receipt of EPA's approval of the final design submittal, Settling Defendants shall submit to EPA and the State a Work Plan for the performance of the Remedial Action at the Site ("Remedial Action Work Plan"). The Remedial Action Work Plan shall provide for construction and implementation of the remedy set forth in the ROD and achievement of the Performance Standards, in accordance with this Consent Decree, the ROD, the SOW, and the design plans and specifications developed in accordance with the Remedial Design Work Plan and approved by EPA. Upon its approval by EPA, the Remedial Action Work Plan shall be incorporated into and become enforceable under this Consent Decree. At the same time as they submit the Remedial Action Work Plan, Settling Defendants shall submit to EPA and the State a Health and Safety Plan for field activities required by the Remedial Action Work Plan which conforms to the applicable Occupational Safety and Health Administration and EPA requirements including, but not limited to, 29 C.F.R. § 1910.120.

b. The Remedial Action Work Plan shall include the following: (1) a Draft Performance Standard Verification Plan; (2) a Draft Construction Quality Assurance Plan; (3) a Draft SAP including the final QAPP and final FSP/Final H&S Plan/Final Contingency Plan; (4) Construction Management Plan; (5) discussion and planning of the RA work elements, including rationale for the various tasks; (6) relevant changes in the RD Work Plan, if any; (7) identification of RA inspections, hold

points, and reports; (8) identification of protocol and coordination of field oversight and preliminary field inspections where applicable; (9) contingency procedures; (10) a Waste Management Plan; (11) a Project Management Plan; (12) Equipment Decontamination Plan; (13) performance measurement points and rationale for their selection; and (14) any other procedures relevant to the RA. The Remedial Action Work Plan also shall include a schedule for implementation of all Remedial Action tasks identified in the final design submittal.

c. Upon approval of the Remedial Action Work Plan by EPA, after a reasonable opportunity for review and comment by the State, Settling Defendants shall implement the activities required under the Remedial Action Work Plan in accordance with the schedule therein. The Settling Defendants shall submit to EPA and the State all plans, submittals, or other deliverables required under the approved Remedial Action Work Plan in accordance with the approved schedule for review and approval pursuant to Section XI (EPA Approval of Plans and Other Submissions). Unless otherwise directed by EPA or approved in writing, Settling Defendants shall not commence physical Remedial Action activities at the Site prior to approval of the Remedial Action Work Plan.

d. Within fifteen (15) days after Settling Defendants preliminarily conclude that construction of the Remedial Action is complete, Settling Defendants shall notify EPA and the State and schedule a Pre-Final Construction Completion inspection with

representatives of Settling Defendants, EPA, and the State. No later than fifteen (15) days after the Pre-Final Construction Completion Inspection, the Settling Defendants shall submit a Pre-Final Construction Completion Report, containing the results of the Pre-Final Construction Completion Inspection and complying with the requirements of the SOW. In the report, a registered professional engineer and the Settling Defendants' Project Coordinator (designated pursuant to Section XII) shall state that the Remedial Action has been constructed in accordance with the approved design and specifications. The written report shall include as-built drawings signed and stamped by a registered professional engineer. The report shall contain the following statement, signed by a responsible corporate official of a Settling Defendant or the Settling Defendants' Project Coordinator:

> "To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

After the Pre-Final Construction Completion Inspection and receipt and review of the Pre-Final Construction Completion Report, EPA may approve, request modifications, or disapprove the Report pursuant to Section XI (EPA Approval of Plans and Other Submissions), after reasonable opportunity to review and comment by the State. If EPA determines that construction of the Remedial Action or any portion thereof has not been completed in

accordance with this Consent Decree, EPA will notify Settling Defendants, in writing, of the activities that must be undertaken by Settling Defendants pursuant to this Consent Decree to complete construction of the Remedial Action. EPA will set forth in the notice a schedule for performance of such activities consistent with the Consent Decree and the SOW and for finalization of the Construction Completion Report, or require the Settling Defendants to submit a schedule to EPA for approval pursuant to Section XI (EPA Approval of Plans and Other Submissions). Settling Defendants shall perform all activities described in the notice in accordance with the specifications and schedules established pursuant to this Paragraph, subject to their right to invoke the dispute resolution procedures set forth in Section XIX (Dispute Resolution). If requested by EPA, Settling Defendants shall schedule a Final Construction Completion Inspection within fifteen (15) days of completion of all activities identified by EPA to be completed. Settling Defendants shall submit a Final Construction Completion Report in accordance with the SOW within ninety (90) days of (i) completion of the last activity required to be performed by Settling Defendant under this Paragraph 12.d., or (ii) the Final Construction Completion Inspection, whichever is later. The Final Construction Completion Report shall contain all of the registered engineer's statements and the responsible corporate official statement required above in this Paragraph 12.d. EPA will attempt to approve or disapprove the Final Construction

Completion Report within ninety (90) days of its receipt of same; nonetheless, a written approval from EPA is required.

e. Commencing upon the date of lodging of this Consent Decree, Settling Defendants agree not to use any portion of the Site for purposes of performing Remedial Action and for conducting O&M of the Remedial Action in violation of any of the restrictions listed in Paragraph 29.a. Commencing upon the date of lodging of this Consent Decree, Settling Defendants also agree not to allow the use by any licensee, agent, contractor, subcontractor, or any person under the control of Settling Defendants given an interest or right to use, enter upon, occupy, or possess any portion of the Site for purposes of performing Remedial Action and for conducting O&M of the Remedial Action in violation of any of the restrictions listed in Paragraph 29.a. With respect to the access restrictions contained in Paragraph 29.a., subparagraph v., and in order to protect the Remedial Action, the public health, and the environment during and after implementation of the Remedial Action, Settling Defendants shall perform and implement the following as Work required by this Consent Decree:

(i) Settling Defendants shall construct a six-foot woven mesh fence, wall or similar device approved by EPA around the TSCA landfill and the cover required by the ROD. And, pursuant to the ROD, if requested by Settling Defendants and approved by

EPA, a building foundation or parking lot may be substituted for the fence and the cover;

(ii) Settling Defendants shall construct a six-foot high fence or similar structure around all areas of the Site with surface concentrations between 1 mg/kg and 10 mg/kg PCBs. And, pursuant to the ROD, if requested by Settling Defendants and approved by EPA, a cap, building foundation, or parking lot may be substituted for the fence.

13. The Settling Defendants shall continue to implement the Remedial Action and O&M until the Performance Standards are achieved, and as required under this Consent Decree. The Settling Defendants shall continue to implement O&M as long as contaminants that exceed the cleanup levels set forth in the ROD remain on-Site, and as required under this Consent Decree.

14. Modification of the SOW or Related Work Plans.

a. If EPA determines that modification to the Work specified in the SOW and/or in Work Plans developed pursuant to the SOW is necessary to achieve and maintain the Performance Standards or to carry out and maintain the effectiveness of the remedy set forth in the ROD, EPA may require that such modification be incorporated in the SOW and/or such Work Plans. A modification may only be required pursuant to this Paragraph, however, to the extent that it is consistent with the scope of the remedy selected in the ROD and the Performance Standards.

b. If Settling Defendants object to any modification determined by EPA to be necessary pursuant to this Paragraph, they may seek dispute resolution pursuant to Section XIX (Dispute Resolution), Paragraph 66 (record review). The SOW and/or related Work Plans shall be modified in accordance with final resolution of the dispute.

c. If Settling Defendants do not invoke dispute resolution or the dispute resolution process results in an adverse decision for Settling Defendants, Settling Defendants shall implement any Work required by any modifications incorporated in the SOW and/or in Work Plans developed pursuant to the SOW in accordance with this Paragraph.

d. Nothing in this Paragraph shall be construed to limit EPA's authority to select and seek performance of further response actions as otherwise provided in this Consent Decree.

e. If at any time during performance of the Work, Settling Defendants identify a need for additional data or work beyond that required by this Consent Decree or in the approved Plans, a memorandum documenting the need for such data or work shall be submitted to the EPA Project Coordinator. EPA, by its Project Coordinator, will determine whether such additional data or work are to be incorporated into subsequent reports and deliverables required in this Consent Decree.

f. The following modifications or changes may be made by written agreement of the Project Coordinators: (1) technical field modifications to, and modifications of any schedules

contained in, any Plan required under the SOW; and (2) any other change to the Plans required in the SOW, not otherwise addressed in this Paragraph or in Section XXXI (Modification) of this Consent Decree.

15. Settling Defendants acknowledge and agree that nothing in this Consent Decree, the SOW, or the Remedial Design or Remedial Action Work Plans constitutes a warranty or representation of any kind by Plaintiff that compliance with the work requirements set forth in the SOW and the Work Plans will achieve the Performance Standards.

16. In accordance with 40 C.F.R. Section 300.440, Settling Defendants shall, prior to any off-Site shipment of Waste Material from the Site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving facility's state and to the EPA Project Coordinator of such shipment of Waste Material. However, this notification requirement shall not apply to any off-Site shipments when the total volume of all such shipments will not exceed 10 cubic yards.

a. The Settling Defendants shall include in the written notification the following information, where available: (1) the name and location of the facility to which the Waste Material is to be shipped; (2) the type and quantity of the Waste Material to be shipped; (3) the expected schedule for the shipment of the Waste Material; and (4) the method of transportation. The Settling Defendants shall notify the state

in which the planned receiving facility is located of major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

b. The identity of the receiving facility and state will be determined by the Settling Defendants following the award of the contract for Remedial Action construction. The Settling Defendants shall provide the information required by Paragraph 15.a as soon as practicable after the award of the contract and before the Waste Material is actually shipped.

VII. REMEDY REVIEW

17. Periodic Review. Settling Defendants shall conduct studies and investigations requested by EPA as necessary to permit EPA to conduct reviews of whether the Remedial Action is protective of human health and the environment at least every five (5) years, as required by Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), and any applicable regulations.

18. EPA Selection of Further Response Actions. If EPA determines, at any time, that the Remedial Action is not protective of human health and the environment, EPA may select further response actions, including Supplemental Institutional Controls, for the Site in accordance with the requirements of CERCLA and the NCP.

19. Opportunity To Comment. Settling Defendants and Owner Settling Defendant and, if required by Sections 113(k)(2)

or 117 of CERCLA, 42 U.S.C. §§ 9613(k)(2) or 9617, the public will be provided with an opportunity to comment on any further response actions proposed by EPA as a result of the review conducted pursuant to Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), and to submit written comments for the record during the comment period.

20. If EPA selects further response actions for the Site related to releases of hazardous substances or the threat of a release of a hazardous substance at or from the Site resulting from the Settling Defendants' disposal of hazardous substances at the Site or performance of the Remedial Action, or Federal PRPs' ownership of the Site or disposal of hazardous substances at the Site, and the reopener conditions in Paragraph 81 or Paragraph 82 (United States' reservations of liability based on unknown conditions or new information) are satisfied, Settling Defendants shall not contest that they are among the persons liable for releases of hazardous substances at or from the Site in any action brought by the United States to require Settling Defendants to perform such further response actions. If EPA selects further response actions that include Supplemental Institutional Controls that only Owner Settling Defendant can perform as the party in possession and control of the property, Owner Settling Defendant shall not contest liability in any action brought by the United States to require Owner Settling Defendant to perform Supplemental Institutional Controls.

VIII. QUALITY ASSURANCE, SAMPLING, AND DATA ANALYSIS

21. Settling Defendants shall use quality assurance, quality control, and chain-of-custody procedures for all treatability, design, compliance and monitoring samples in accordance with "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operation" (EPA QA/R5); "Preparing Perfect Project Plans" (EPA /600/9-88/087), and subsequent amendments to such guidelines upon notification by EPA to Settling Defendants of such amendment. Amended guidelines shall apply only to procedures conducted after such notification. Prior to the commencement of any monitoring project under this Consent Decree, Settling Defendants shall submit to EPA for approval, after a reasonable opportunity for review and comment by the State, a Quality Assurance Project Plan ("QAPP") that is consistent with the SOW, the NCP, and applicable guidance documents referred to in writing or provided to Settling Defendants by EPA. If relevant to the proceeding, the Parties agree that validated sampling data generated in accordance with the QAPP(s) and reviewed and approved by EPA shall be admissible as evidence, without objection, in any proceeding under this Decree. Settling Defendants shall ensure that EPA and State personnel and their authorized representatives are allowed access at reasonable times to all laboratories utilized by Settling Defendants in implementing this Consent Decree. In addition, Settling Defendants shall ensure that such laboratories shall analyze all samples submitted by EPA pursuant to the QAPP for

quality assurance monitoring. Settling Defendants shall ensure that the laboratories they utilize for the analysis of samples taken pursuant to this Decree perform all analyses according to accepted EPA methods. Accepted EPA methods consist of those methods which are documented in the "Contract Lab Program Statement of Work for Inorganic Analysis" and the "Contract Lab Program Statement of Work for Organic Analysis," dated February 1988, and any amendments made thereto during the course of the implementation of this Decree. Settling Defendants shall ensure that all laboratories they use for analysis of samples taken pursuant to this Consent Decree participate in an EPA or EPA-equivalent QA/QC program. Settling Defendants shall ensure that all field methodologies utilized in collecting samples for subsequent analysis pursuant to this Decree will be conducted in accordance with the procedures set forth in the QAPP approved by EPA.

22. Upon request, the Settling Defendants shall allow split or duplicate samples to be taken by EPA or its authorized representatives. Settling Defendants shall notify EPA and the State not less than 28 days in advance of any sample collection activity unless shorter notice is agreed to by EPA. In addition, EPA shall have the right to take any additional samples that EPA deems necessary. Upon request, EPA shall allow the Settling Defendants to take split or duplicate samples of any samples it takes as part of the Plaintiff's oversight of the Settling Defendants' implementation of the Work.

23. Settling Defendants shall submit to EPA two (2) copies of the results of all sampling and/or tests or other data obtained or generated by or on behalf of Settling Defendants with respect to the Site and/or the implementation of this Consent Decree unless EPA agrees otherwise.

24. Notwithstanding any provision of this Consent Decree, the United States hereby retains all of its information gathering and inspection authorities and rights, including enforcement actions related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

IX. ACCESS AND INSTITUTIONAL CONTROLS

25. In accordance with Section VII of the Partial Consent Decree, Owner Settling Defendant shall provide access to the United States and its representatives, the State and its representatives, and to Settling Defendants and their agents and representatives, to the Site and to any such other property under its control, that is necessary for the implementation of the ROD and this Consent Decree.

26. To the extent that the Site or any other property to which access is required for the implementation of this Consent Decree is owned or controlled by persons other than the Owner Settling Defendant, Settling Defendants shall use best efforts to secure from such persons access for Settling Defendants, as well as for the United States and the State and their representatives, including, but not limited to, their

contractors, as necessary to effectuate this Consent Decree. For purposes of this Paragraph "best efforts" includes the payment of reasonable sums of money in consideration of access. If any access required to complete the Work is not obtained within forty-five (45) days of the date of lodging of this Consent Decree, or within forty-five (45) days of the date EPA notifies the Settling Defendants, in writing, that additional access beyond that previously secured is necessary, Settling Defendants shall promptly notify the United States, in writing, and shall include in that notification a summary of the steps Settling Defendants have taken to attempt to obtain access. The United States may, as it deems appropriate, assist Settling Defendants in obtaining access. Settling Defendants shall reimburse the United States, in accordance with the procedures in Section XVI (Reimbursement of Response Costs), for all costs incurred by the United States in obtaining access.

27. Notwithstanding any provision of this Consent Decree, the United States retains all of its access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA and any other applicable statute or regulations.

28. Notice to Successors-in-Title

a. Within fifteen (15) days of the entry of this Consent Decree, Owner Settling Defendant shall execute and file with the State Recorder's Office, Anchorage District, State of Alaska, a Declaration of Restrictive Covenants and Notice of

Remedial Action in the form attached to this Consent Decree as Appendix E.

b. At least 30 days prior to the conveyance of any interest in property located within the Site including, but not limited to, fee interests, leasehold interests, and mortgage interests, the Owner Settling Defendant shall give written notice of this Consent Decree, the Declaration of Restrictive Covenants and Notice of Remedial Action, and any additional covenants, terms, conditions and restrictions, if applicable, that have been filed with respect to the property pursuant to Section IX (Access and Institutional Controls) to the grantee and written notice to EPA and ADEC of the proposed conveyance, including the name and address of the grantee and the date on which the Declaration of Restrictive Covenants and Notice of Remedial Action was given to the grantee. In the event of any such conveyance, Owner Settling Defendant shall remain obligated to: (1) secure access and implement Institutional Controls under this Consent Decree to the extent the Site is in the possession or control of ARRC; and (2) undertake to enforce the access and use restrictions contained in this Consent Decree when such restrictions are not being complied with. In no event shall the conveyance release or otherwise affect the liability of the Settling Defendants to comply with all provisions of this Consent Decree. If the United States approves in writing, the grantee may perform some or all of the Work under this Consent Decree.

29.a. Commencing upon the date of lodging of this Consent Decree, the Owner Settling Defendant agrees not to use, occupy or possess the property, or some portion thereof, described in the legal description attached as Appendix C, that is owned or controlled by the Owner Settling Defendant or for which access and land use restrictions are required to protect the remedial action, the public health, or the environment during or after implementation of the remedial action, in violation of any of the restrictions provided in this Paragraph. Commencing upon the date of lodging of this Consent Decree, the Owner Settling Defendant also agrees not to allow the use by any licensee, lessee, or any person given an interest to use, occupy, or possess the property, or some portion thereof, described in the legal description attached as Appendix C that is owned or controlled by the Owner Settling Defendant or, for which access and land use restrictions are required to protect the remedial action, the public health, or the environment during or after implementation of the remedial action, in violation of any of the following restrictions:

(i) no residential use or activity shall be permitted on the property, and no commercial use or activity shall be permitted if it involves potential chronic exposures of children to soil (e.g., use of the property for a day care center);

(ii) no use or activity on the property shall be permitted that will disturb any of the remedial measures that have been implemented pursuant to this Consent Decree or that could potentially impair the integrity of the landfill in which contaminated soils and solidified soils have been disposed; and

(iii) except as necessary to perform the Remedial Action, no use or activity on the property shall disturb the surface or subsurface of the land by filling, drilling, excavation, or removal of topsoil, rock or minerals which could move soil containing greater than 1,000 mg/kg lead or 10 mg/kg polychlorinated biphenyl (PCB) to the surface or within the top foot of soil where chronic long-term worker exposures could occur;

(iv) groundwater underlying the property shall not be consumed or used in any way except for the limited purpose of monitoring ground water contamination levels. Ground water wells and facilities installed for such purpose shall only be installed pursuant to a plan approved by EPA;

(v) access to the TSCA landfill by the general public shall be prohibited, and access by long- or short-term workers shall be restricted in compliance with 40 C.F.R. § 761.75(b)(9)(i), through maintenance of a six-foot woven mesh fence, wall, or similar device. If the solidified soil mass is capped or designed and used as a building foundation or parking lot, EPA may waive this requirement upon a written request which shall include long-term maintenance of such cap, building foundation or parking lot in accordance with the approved O & M Plan. Unrestricted access by the general public to those areas of the Site where surface contamination of 1 mg/kg PCB or greater remains after all excavation, treatment, and disposal is complete shall be prohibited through maintenance of a six-foot fence, cap, parking lot or similar structure approved by EPA; and

(vi) during remedial design and construction of the remedial action, the public, including long and short-term workers, other than authorized representatives of EPA, the State, and Settling Defendants and Owner Settling Defendant, shall only have access to areas in or around the Site that are not affected by soil contamination.

b. If Owner Settling Defendant, any transferee of an interest in the Site or any Settling Defendant seek to undertake any restricted use or activity on the property, such use or

activity may be proposed to EPA in accordance with Section XIX (EPA Approval of Plan and Other Submissions) and EPA's disapproval shall be subject to dispute resolution under Paragraph 66 of Section XIX (Dispute Resolution).

c. Owner Settling Defendant agrees that upon transfer of fee simple title from the United States, it will accept such fee simple title subject to the restrictions listed in subparagraph 29.a. above if the United States places such restrictions on the property as a part of such transfer.

d. Owner Settling Defendant agrees that, in order to perform and implement the remedial action selected in the ROD, it is appropriate and necessary to impose access obligations contained in Paragraph 25 of this Consent Decree, and the land and water use restrictions and access restrictions listed in subparagraph 29.a. above, on the real property described in Appendix C.

e. Owner Settling Defendant, in any instrument conveying an interest in the Site shall provide an access right to the United States, the State, Settling Defendants, and their representatives, and shall place the land and water use restrictions and access restrictions listed in subparagraph 29.a. above on the Site, which shall run with the land and be binding upon successors in interest. Owner Settling Defendant agrees to condition the conveyance of any interest in property located within the Site, including, but not limited to, fee interests, leasehold interests, and mortgage interests, upon the express

written agreement of the person or persons acquiring the interest that such person or persons will take such interest subject to the access obligations contained in Paragraph 25, and land and water use restrictions and access restrictions contained in this Consent Decree. In addition, prior to or upon a transfer of any interest in the Site Owner, Settling Defendant shall comply with the following requirements:

(i) impose the access obligations identified in Paragraph 25 and the land and water use restrictions and access restrictions identified in Paragraph 29.a. on such property by including in the instrument transferring such property the Reservation of Access Easement and Restrictions on Use set forth in Appendix F. Within seven (7) days of the execution of the instrument conveying any title interest in Property described in Appendix C, the Owner Settling Defendant shall ensure said instrument is in recordable form and record such instrument with the State Recorder's Office, Anchorage District, State of Alaska, or other appropriate office where land ownership and transfer records are maintained for the subject property(ies), or

(ii) upon the transfer of any leasehold interest in real property described in Appendix C, Owner Settling Defendant shall impose the access obligations identified in Paragraph 25 and the land and water use restrictions and access restrictions identified in Paragraph 29.a. by including in the lease transferring such a lease interest the Lease Prohibition set forth in Appendix G. Within 7 days of execution of such lease, the Owner Settling Defendant shall ensure the lease is in recordable form and record such lease in the State Recorder's Office, Anchorage District, State of Alaska, or other appropriate office where land ownership and transfer records are maintained for the subject property(ies).

(iii) Prior to a transfer of any interest in the Site by a conveyance instrument containing the language in Appendices F or G required in Subparagraphs e. (i) and (ii) above, Owner Settling Defendant shall

review the language for consistency with then existing State or local law.

30. Within sixty (60) days of the Effective Date of this Consent Decree, Owner Settling Defendant shall provide a copy of the executed and recorded Declaration of Restriction Covenant and Notice of Remedial Action (Appendix E) to the following entities:

State of Alaska
- Alaska Department of Environmental Conservation
- Alaska Department of Fish & Game

Municipality of Anchorage ("MOA")
- MOA Department of Community Planning and Development
- MOA Department of Public Works
- MOA Department of Parks & Recreation

Utilities
- Anchorage Water & Wastewater Utility
- Anchorage Municipal Power & Light
- Chugach Electric Association
- Enstar Natural Gas
- AT&T Alascom
- ATU Telecommunications
- Prime Cable of Alaska

As long as Owner Settling Defendant is in possession and control of the Site, Owner Settling Defendant shall send a copy of the recorded Declaration to other agencies, departments or entities in the future that it becomes aware of could affect land or water use at the Site or remedial activities taken thereon. Owner Settling Defendant shall send EPA copies of all notices required by this Paragraph.

X. REPORTING REQUIREMENTS

31. In addition to any other requirement of this Consent Decree, Settling Defendants shall submit to EPA and the State two (2) copies of written monthly progress reports that:

(a) describe the actions which have been taken toward achieving compliance with this Consent Decree during the previous month; (b) include a summary of all results of sampling and tests and all other data received or generated by Settling Defendants or their contractors or agents in the previous month; (c) identify all Work Plans, plans, and other deliverables required by this Consent Decree completed and submitted during the previous month; (d) describe all actions, including, but not limited to, data collection and implementation of Work Plans, which are scheduled for the next month and provide other information relating to the progress of construction, such as critical path diagrams, Gantt charts or Pert charts; (e) include information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule for implementation of the Work, and a description of efforts made to mitigate those delays or anticipated delays; (f) include any modifications to the Work Plans or other schedules that Settling Defendants have proposed to EPA or that have been approved by EPA; and (g) describe all activities undertaken in support of the Community Relations Plan during the previous month and those to be undertaken in the next month. Settling Defendants shall submit these progress reports to EPA and the State by the fifteenth (15th) day of every month following the lodging of this Consent Decree until EPA notifies the Settling Defendants pursuant to Paragraph 50.b. of Section XIV (Certification of Completion). If requested by EPA, Settling Defendants shall also

provide briefings for EPA and the State to discuss the progress of the Work.

32. The Settling Defendants shall notify EPA of any change in the schedule described in the monthly progress report for the performance of any activity, including, but not limited to, data collection and implementation of Work Plans, no later, when possible, than seven (7) days prior to the performance of the activity.

33. Upon the occurrence of any event during performance of the Work that Settling Defendants are required to report pursuant to Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-Know Act (EPCRA), 42 U.S.C. § 11004, Settling Defendants shall within 24 hours of learning of the onset of such event orally notify the EPA Project Coordinator or the Alternate EPA Project Coordinator (in the event of the unavailability of the EPA Project Coordinator), or, in the event that neither the EPA Project Coordinator or Alternate EPA Project Coordinator is available, the Emergency Response Section, Region 10, United States Environmental Protection Agency. These reporting requirements are in addition to the reporting required by CERCLA Section 103 or EPCRA Section 304.

34. Within twenty (20) days of learning of the onset of such an event, Settling Defendants shall furnish to Plaintiff a written report, signed by the Settling Defendants' Project Coordinator, setting forth the events that occurred and the

measures taken, and to be taken, in response thereto. Within thirty (30) days of the conclusion of such an event, Settling Defendants shall submit a report setting forth all actions taken in response thereto.

35. Settling Defendants shall submit two (2) copies of all plans, reports, and data required by the SOW, the Remedial Design Work Plan, the Remedial Action Work Plan, or any other approved plans to EPA in accordance with the schedules set forth in such plans. Settling Defendants shall simultaneously submit one copy of all such plans, reports, and data to the State.

36. All reports and other documents submitted by Settling Defendants to EPA (other than the monthly progress reports referred to above) which purport to document Settling Defendants' compliance with the terms of this Consent Decree shall be signed by an authorized representative of the Settling Defendants.

XI. EPA APPROVAL OF PLANS AND OTHER SUBMISSIONS

37. After review of any plan, report or other item that is required to be submitted for approval pursuant to this Consent Decree, EPA, after reasonable opportunity for review and comment by the State, shall in writing: (a) approve the submission, in whole or in part; (b) approve the submission upon specified conditions; (c) modify the submission to cure the deficiencies; (d) disapprove the submission, in whole or in part, directing that the Settling Defendants modify the submission; or

(e) any combination of the above. However, EPA shall not modify a submission without first providing Settling Defendants at least one written notice of deficiency and an opportunity to cure within thirty (30) days, except where to do so would cause serious disruption to the Work or where previous submission(s) have been disapproved due to material defects and the deficiencies in the submission under consideration indicate a bad faith lack of effort to submit an acceptable deliverable.

38. In the event of approval, approval upon conditions, or modification by EPA, pursuant to Paragraph 37(a), (b), or (c), Settling Defendants shall proceed to take any action required by the plan, report, or other item, as approved or modified by EPA subject only to their right to invoke the Dispute Resolution procedures set forth in Section XIX (Dispute Resolution) with respect to the modifications or conditions made by EPA. In the event that EPA modifies the submission to cure the deficiencies pursuant to Paragraph 37(c) because the submission has a material defect, EPA retains its right to seek stipulated penalties, as provided in Section XX (Stipulated Penalties).

39.a. Upon receipt of a notice of disapproval pursuant to Paragraph 37(d), Settling Defendants shall, within thirty (30) days, or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the plan, report, or other item for approval. Any stipulated penalties applicable to the submission, as provided in Section XX, shall accrue during the

30-day or otherwise specified period, but shall not be payable unless the resubmission is disapproved or modified due to a material defect as provided in Paragraphs 40 and 41.

b. Notwithstanding the receipt of a notice of disapproval pursuant to Paragraph 37(d), Settling Defendants shall proceed, at the direction of EPA, to take any action required by any non-deficient portion of the submission. Implementation of any non-deficient portion of a submission shall not relieve Settling Defendants of any liability for stipulated penalties, if applicable, under Section XX (Stipulated Penalties).

40. In the event that a resubmitted plan, report, or other item, or portion thereof, is disapproved by EPA, EPA may again require the Settling Defendants to correct the deficiencies, in accordance with the preceding Paragraphs. EPA also retains the right to modify or develop the plan, report or other item. Settling Defendants shall implement any such plan, report, or item as modified or developed by EPA, subject only to their right to invoke the procedures set forth in Section XIX (Dispute Resolution).

41. If upon resubmission, a plan, report, or item is disapproved or modified by EPA due to a material defect, Settling Defendants shall be deemed to have failed to submit such plan, report, or item timely and adequately unless the Settling Defendants invoke the dispute resolution procedures set forth in Section XIX (Dispute Resolution) and EPA's action is overturned

pursuant to that Section. The provisions of Section XIX (Dispute Resolution) and Section XX (Stipulated Penalties) shall govern the implementation of the Work and accrual and payment of any stipulated penalties during Dispute Resolution. If EPA's disapproval or modification is upheld, stipulated penalties, if applicable, shall accrue for such violation from the date on which the initial submission was originally required, as provided in Section XX.

42. All plans, reports, and other items required to be submitted to EPA under this Consent Decree shall, upon approval or modification by EPA, be enforceable under this Consent Decree. In the event EPA approves or modifies a portion of a plan, report, or other item required to be submitted to EPA under this Consent Decree, the approved or modified portion shall be enforceable under this Consent Decree.

XII. PROJECT COORDINATORS

43. Within twenty (20) days of lodging this Consent Decree, Settling Defendants, Owner Settling Defendant, EPA, and the State will notify each other, in writing, of the name, address and telephone number of their respective designated Project Coordinators and Alternate Project Coordinators. If a Project Coordinator or Alternate Project Coordinator initially designated is changed, the identity of the successor will be given to the other Parties and the State at least five (5) working days before the changes occur, unless impracticable, but

in no event later than the actual day the change is made. The Settling Defendants' Project Coordinator shall be subject to disapproval by EPA and shall have the technical expertise sufficient to adequately oversee all aspects of the Work. The Settling Defendants' Project Coordinator shall not be an attorney for any of the Settling Defendants in this matter. He or she may assign other representatives, including other contractors, to serve as a Site representative for oversight of performance of daily operations during remedial activities.

44. Plaintiff may designate other representatives, including, but not limited to, EPA employees, and federal contractors and consultants, to observe and monitor the progress of any activity undertaken pursuant to this Consent Decree. EPA's Project Coordinator and Alternate Project Coordinator shall have the authority lawfully vested in a Remedial Project Manager (RPM) and an On-Scene Coordinator (OSC) by the NCP, 40 C.F.R. Part 300. In addition, EPA's Project Coordinator or Alternate Project Coordinator shall have authority, consistent with the NCP, to halt any Work required by this Consent Decree and to take any necessary response action when s/he determines that conditions at the Site constitute an emergency situation or may present an immediate threat to public health or welfare or the environment due to release or threatened release of Waste Material.

[Paragraph 45. Intentionally Left Blank]

XIII. ASSURANCE OF ABILITY TO COMPLETE WORK

46. Within thirty (30) days of entry of this Consent Decree, Settling Defendants shall establish and maintain financial security in the amount of $3,234,000 (38.5% of the high cost estimate for Solidification/Stabilization in the Feasibility Study plus a 50% cost overrun contingency) in one or more of the following forms:

(a) A surety bond guaranteeing performance of the Work;

(b) One or more irrevocable letters of credit equalling the total estimated cost of the Work;

(c) A trust fund;

(d) A guarantee to perform the Work by one or more parent corporations or subsidiaries, or by one or more unrelated corporations that have a substantial business relationship with at least one of the Settling Defendants; or

(e) A demonstration that one or more of the Settling Defendants satisfy the requirements of 40 C.F.R. Section 264.143(f).

47. If the Settling Defendants seek to demonstrate the ability to complete the Work through a guarantee by a third party pursuant to Paragraph 46(d) of this Consent Decree, Settling Defendants shall demonstrate that the guarantor satisfies the requirements of 40 C.F.R. Section 264.143(f). If Settling Defendants seek to demonstrate their ability to complete the Work by means of the financial test or the corporate guarantee pursuant to Paragraph 46(d) or (e), they shall resubmit sworn

statements conveying the information required by 40 C.F.R. Section 264.143(f) annually, on the anniversary of the Effective Date of this Consent Decree. In the event that EPA determines at any time that the financial assurances provided pursuant to this Section are inadequate, Settling Defendants shall, within thirty (30) days of receipt of notice of EPA's determination, obtain and present to EPA for approval one of the other forms of financial assurance listed in Paragraph 46 of this Consent Decree. Settling Defendants' inability to demonstrate financial ability to complete the Work shall not excuse performance of any activities required under this Consent Decree.

48. If Settling Defendants can show that the estimated cost to complete the remaining Work has diminished below the amount set forth in Paragraph 46 above after entry of this Consent Decree, Settling Defendants may, on any anniversary date of entry of this Consent Decree, or at any other time agreed to by the Settling Defendants and EPA, reduce the amount of the financial security provided under this Section to the estimated cost of the remaining Work to be performed. Settling Defendants shall submit a proposal for such reduction to EPA, in accordance with the requirements of this Section, and may reduce the amount of the security upon approval by EPA. In the event of a dispute, Settling Defendants may reduce the amount of the security in accordance with the final administrative or judicial decision resolving the dispute pursuant to Section XIX (Dispute Resolution).

49. Settling Defendants may change the form of financial assurance provided under this Section at any time, upon notice to and approval by EPA, provided that the new form of assurance meets the requirements of this Section. In the event of a dispute, Settling Defendants may change the form of the financial assurance only in accordance with the final administrative or judicial decision resolving the dispute.

XIV. CERTIFICATION OF COMPLETION

50. Completion of the Remedial Action

a. Notice. Upon Settling Defendants' preliminary determination that the Remedial Action is operational and functional and that Performance Standards have been met, but no sooner than two (2) years following the Final Construction Completion Inspection, Settling Defendants shall provide notice to EPA and the State that Remedial Action is complete.

b. Draft Completion of Remedial Action Report. Within thirty (30) days from the notice required in subparagraph a. above, Settling Defendants shall submit a Draft Completion of Remedial Action Report. In the report, a registered professional engineer and the Settling Defendants' project Coordinator shall state that the Remedial Action has been constructed in accordance with the approved design and specifications and is operational and functional. The report shall reference all the data and supporting documentation on which Settling Defendants rely to determine that all Performance Standards have been met and the RA

has been completed in accordance with the ROD, SOW, and this Consent Decree. The written report shall be signed and stamped by a registered professional engineer and reference as-built drawings from the Final Construction Completion Report. The report shall contain the following statement, signed by a responsible corporate official of a Settling Defendant or the Settling Defendants' Project Coordinator:

> "To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

c. Final Completion of Remedial Action Report. Within thirty (30) days of receipt of EPA comments on the Draft Completion of Remedial Action Report, Settling Defendants shall submit a Final Completion of Remedial Action Report. In the report, a registered professional engineer and the Settling Defendants' Project Coordinator shall state the RA has been completed in full satisfaction of the requirements of the Consent Decree. The written report shall be signed and stamped by a registered professional engineer and reference as-built drawings from the Final Construction Completion Report. The report shall contain the following statement, signed by a responsible corporate official of a Settling Defendant or the Settling Defendants' Project Coordinator:

> "To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate,

and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

d. Certification of Completion. If EPA concludes, based on the Final Completion of Remedial Action Report requesting Certification of Completion and after a reasonable opportunity for review and comment by the State, that the Remedial Action has been performed in accordance with this Consent Decree and that the Performance Standards have been achieved, EPA will so certify, in writing, to Settling Defendants. EPA will attempt to certify completion within ninety (90) days of receipt of the Final Completion of Remedial Action Report, nonetheless, a written certification from EPA is necessary for Remedial Action to be complete. This certification shall constitute the Certification of Completion of the Remedial Action for purposes of this Consent Decree, including, but not limited to, Section XXI (Covenants Not to Sue by Plaintiff). Certification of Completion of the Remedial Action shall not affect Settling Defendants' and Owner Settling Defendant's obligations under this Consent Decree that extend beyond completion of the Remedial Action.

XV. EMERGENCY RESPONSE

51. In the event of any action or occurrence during the performance of the Work which causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or

welfare or the environment, Settling Defendants shall, subject to Paragraph 52, immediately take all appropriate action to prevent, abate, or minimize such release or threat of release, and shall immediately notify the EPA's Project Coordinator, or, if the Project Coordinator is unavailable, EPA's Alternate Project Coordinator. If neither of these persons is available, the Settling Defendants shall notify the EPA Emergency Response and Cleanup Unit 1, Region 10. Settling Defendants shall take such actions in consultation with EPA's Project Coordinator or other available authorized EPA officer and in accordance with all applicable provisions of the Health and Safety Plans, the Contingency Plans, and any other applicable plans or documents developed pursuant to the SOW. In the event that Settling Defendants fail to take appropriate response actions as required by this Section, and EPA takes such actions instead, Settling Defendants shall, pursuant to Section XVI (Reimbursement of Response Costs), reimburse EPA for all costs incurred in connection with response actions not inconsistent with the NCP.

52. Nothing in the preceding Paragraph or in this Consent Decree shall be deemed to limit any authority of the United States: a) to take all appropriate action to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site; or b) to direct or order such action, or seek an order from the Court, to protect human health and the environment or to prevent, abate, respond to, or minimize an

actual or threatened release of Waste Material on, at, or from the Site, subject to Section XXI (Covenants Not to Sue by Plaintiff).

XVI. REIMBURSEMENT OF RESPONSE COSTS

53. In accordance with this Section XVI, Settling Defendants shall reimburse the EPA Hazardous Substance Superfund for all Future Response Costs as defined in this Consent Decree for response actions not inconsistent with the NCP. The United States will send Settling Defendants a bill requiring payment that includes a Superfund Cost Organization and Recovery Enhancement System (SCORES) Report and a DOJ Cost Summary on a periodic basis. Except as otherwise provided in Paragraph 54, Settling Defendants shall pay no less than 38.5% of each bill within sixty (60) days of Settling Defendants' receipt of each bill requiring payment and shall pay the Federal PRPs' share of 61.5% (as set forth in the Partial Consent Decree) of each bill within ten (10) days of receipt of payment from the Federal PRPs if the federal payment is not received before or during the 60-day payment period. The Settling Defendants shall make all payments required by this Paragraph in the form of a certified or cashier's check or checks made payable to "EPA Hazardous Substance Superfund" and referencing the EPA Region and Site/Spill ID # 102P; the DOJ case number 90-11-3-810, and the name and address of the party making payment. The Settling Defendants shall send the check(s) to:

Mellon Bank
EPA-Region 10
Attn: Superfund Accounting
P.O. Box 360903M
Pittsburgh, PA 15251

and shall send copies of the check(s) to the United States as specified in Section XXVI (Notices and Submissions) and to Joseph Penwell, Finance Unit, Office of Management Programs, Mail Stop OMP-146, 1200 Sixth Avenue, Seattle, Washington, 98101. In the alternative, Settling Defendants shall make payments required by this Paragraph to the EPA Hazardous Substance Superfund by FedWire Electronic Funds Transfer. Wire transfer instructions will be provided by EPA upon request.

54.a. Settling Defendants may contest payment of any Future Response Costs under Paragraph 53 if they determine that the United States has made an accounting error or if they allege that a cost item that is included represents response actions that are inconsistent with the NCP or costs outside the scope of this Consent Decree. Such objection shall be made, in writing, within sixty (60) days of receipt of the bill and must be sent to the United States pursuant to Section XXVI (Notices and Submissions). Any such objection shall specifically identify the contested Future Response Costs and the basis for objection. In the event of an objection, the Settling Defendants shall within the sixty (60) day period pay all uncontested Future Response Costs to the United States in the manner described in Paragraph 53. Simultaneously, the Settling Defendants shall establish an

interest-bearing bank account in a federally-insured bank duly chartered in the State of Alaska and remit to that bank account funds equivalent to the amount of the contested Future Response Costs. The Settling Defendants shall send to the United States, as provided in Section XXVI (Notices and Submissions), a copy of the letter and the check transmitting the uncontested Future Response Costs to the bank, and a copy of the correspondence that establishes and funds the bank account, including, but not limited to, information containing the identity of the bank and bank account under which the account is established as well as a bank statement showing the initial balance of the bank account. Simultaneously with establishment of the bank account, the Settling Defendants shall initiate the Dispute Resolution procedures in Section XIX (Dispute Resolution). If the United States prevails in the dispute, within five (5) days of the resolution of the dispute, the Settling Defendants shall pay the sums due (with accrued Interest) to the United States in the manner described in Paragraph 53. If the Settling Defendants prevail concerning any aspect of the contested costs, the Settling Defendants shall pay that portion of the costs (plus associated accrued Interest) for which they did not prevail to the United States in the manner described in Paragraph 53; Settling Defendants shall be disbursed any balance of the bank account. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XIX (Dispute Resolution) shall be the exclusive mechanisms for

resolving disputes regarding the Settling Defendants' obligation to reimburse the United States for its Future Response Costs.

b. Within thirty (30) days of receipt of each bill, Settling Defendants may request the following categories of supporting documentation: employee time sheets for payroll costs; receipts for travel costs; contractor invoices and supporting documentation for contractor charges and expenses; and computation of EPA indirect costs. Some of the requested information may be redacted or issued only after Settling Defendants agree to protective provisions if the information is subject to a claim of privilege or is confidential business information. EPA shall provide the requested supporting documentation within thirty (30) days of receipt of the written request.

55. In the event that the payments required by Paragraph 53 are not made within sixty (60) days of the Settling Defendants' receipt of the bill, Settling Defendants shall pay Interest on the 38.5% share of the unpaid balance. The Interest on Future Response Costs shall begin to accrue on the date of the bill. The Interest shall accrue through the date of the Settling Defendants' payment. If Settling Defendants do not receive the Federal PRPs' share of Future Response Costs until after the 60-day payment period, and if Settling Defendants receive Interest from the Federal PRPs on their share of any billed Future Response Costs, Settling Defendants shall pay the Interest received from the Federal PRPs to the United States at the same

time it pays the Federal PRPs' share of Future Response Costs as provided above. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to Plaintiff by virtue of Settling Defendants' failure to make timely payments under this Section. The Settling Defendants shall make all payments required by this Paragraph in the manner described in Paragraph 53.

XVII. INDEMNIFICATION AND INSURANCE

56.a. The United States does not assume any liability by entering into this agreement or by virtue of any designation of Settling Defendants as EPA's authorized representatives under Section 104(e) of CERCLA, 42 U.S.C. § 9604(e). Settling Defendants and/or Owner Settling Defendant, as appropriate, shall indemnify, save and hold harmless the United States (excluding, for this purpose, the Federal PRPs) and its officials, agents, employees, contractors, subcontractors, or representatives for or from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Settling Defendants and/or Owner Settling Defendant, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Consent Decree, including, but not limited to, any claims arising from any designation of Settling Defendants or Owner Settling Defendant as EPA's authorized representatives

under Section 104(e) of CERCLA, 42 U.S.C. § 9604(e). Further, the Settling Defendants and/or Owner Settling Defendant, as appropriate, agree to pay the United States (excluding, for this purpose, the Federal PRPs) all costs it incurs including, but not limited to, attorneys' fees and other expenses of litigation and settlement arising from, or on account of, claims made against the United States based on negligent or other wrongful acts or omissions of Settling Defendants and/or Owner Settling Defendant, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Consent Decree. The United States shall not be held out as a party to any contract entered into, by or on behalf of Settling Defendants or Owner Settling Defendant in carrying out activities pursuant to this Consent Decree. Neither the Settling Defendants, Owner Settling Defendant, nor any such contractor shall be considered an agent of the United States. Notwithstanding anything herein to the contrary, Settling Defendants shall not be liable to indemnify, save and hold harmless or pay the United States' costs under this Paragraph for the negligent or wrongful acts or omissions of Owner Settling Defendant or the Owner Settling Defendant's officers, directors, employees, agents, contractors, subcontractors, or other persons acting on it's behalf or under it's control. Likewise, Owner Settling Defendant shall not be liable to indemnify, save and hold harmless or pay the United States' costs under this

Paragraph for the negligent or wrongful acts or omissions of Settling Defendants or Settling Defendants' officers, directors, employees, agents, contractors, subcontractors, or other persons acting on their behalf or under their control.

b. The United States shall give Settling Defendants and/or Owner Settling Defendant, as appropriate, notice of any claim for which the United States plans to seek indemnification pursuant to Paragraph 56.a., and shall consult with Settling Defendants and/or Owner Settling Defendant, as appropriate, prior to settling such claim.

57. Settling Defendants and Owner Settling Defendant waive all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between any one or more of Settling Defendants, Owner Settling Defendant, and any person for performance of Work or Institutional Controls implemented by Owner Settling Defendant on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, Settling Defendants and Owner Settling Defendant shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between any one or more of Settling Defendants, Owner Settling Defendant, and any person for performance of Work or Institutional Controls implemented by Owner Settling Defendant on or relating to the

Site, including, but not limited to, claims on account of construction delays.

58. No later than fifteen (15) days before commencing any on-Site Work, Settling Defendants or their contractor or subcontractor, as set forth below, shall secure, and shall maintain until the first anniversary of EPA's Certification of Completion of the Remedial Action pursuant to Paragraph 50 of Section XIV (Certification of Completion)] comprehensive general liability insurance with limits of $3 million, combined single limit (including excess umbrella coverage), and automobile liability insurance with limits of $1 million, combined single limit, naming the United States as an additional insured (including excess umbrella coverage). In addition, for the duration of this Consent Decree, Settling Defendants shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of workers' compensation insurance for all persons performing the Work on behalf of Settling Defendants in furtherance of this Consent Decree. Prior to commencement of the Work under this Consent Decree, Settling Defendants shall provide to EPA certificates of such insurance and a copy of each insurance policy. Settling Defendants shall resubmit such certificates and copies of policies each year on the anniversary of the Effective Date of this Consent Decree. If Settling Defendants demonstrate by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to

that described above, or insurance covering the same risks but in a lesser amount, then, with respect to that contractor or subcontractor, Settling Defendants need provide only that portion of the insurance described above which is not maintained by the contractor or subcontractor.

XVIII. FORCE MAJEURE

59. "Force Majeure", for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of the Settling Defendants or Owner Settling Defendant, of any entity controlled by Settling Defendants or Owner Settling Defendant, or their contractors, that delays or prevents the performance of any obligation under this Consent Decree despite Settling Defendants' or Owner Settling Defendant's best efforts to fulfill the obligation. The requirement that the Settling Defendants and Owner Settling Defendant exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential Force Majeure event and best efforts to address the effects of any potential Force Majeure event (1) as it is occurring, and (2) following the potential Force Majeure event, such that the delay is minimized to the greatest extent possible. "Force Majeure" does not include financial inability to complete the Work or a failure to attain the Performance Standards.

60. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree, whether or not caused by a Force Majeure event, the Settling

Defendants or Owner Settling Defendant shall notify orally EPA's Project Coordinator or, in his or her absence, EPA's Alternate Project Coordinator or, in the event both of EPA's designated representatives are unavailable, the Director of the Office of Environmental Cleanup, EPA Region 10, within five (5) days of when Settling Defendants or Owner Settling Defendant first knew that the event might cause a delay. Within five (5) days thereafter, Settling Defendants or Owner Settling Defendant shall provide, in writing, to EPA an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; the Settling Defendants' rationale for attributing such delay to a Force Majeure event if they intend to assert such a claim; and a statement as to whether, in the opinion of the Settling Defendants or Owner Settling Defendant, such event may cause or contribute to an endangerment to public health, welfare or the environment. The Settling Defendants or Owner Settling Defendant shall include with any notice all available documentation supporting their claim that the delay was attributable to a Force Majeure event. Failure to comply with the above requirements shall preclude Settling Defendants or Owner Settling Defendant from asserting any claim of Force Majeure for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. Settling Defendants shall be

deemed to know of any circumstance of which Settling Defendants, any entity controlled by Settling Defendants or their contractors knew or should have known. Owner Settling Defendant shall be deemed to know of any circumstance of which Owner Settling Defendant, any entity controlled by Owner Settling Defendant, or its contractors knew or should have known. Neither Settling Defendants nor Owner Settling Defendant shall be deemed to have knowledge of circumstances within the control of the other Party or any entity controlled by the other Party, and a Force Majeure event hereunder shall include events arising from causes beyond the control of Settling Defendants or Owner Settling Defendant, as the case may be, even if such events are within the control of the other Party or any entity controlled by the other Party.

61. If EPA agrees that the delay or anticipated delay is attributable to a Force Majeure event, the time for performance of the obligations under this Consent Decree that are affected by the Force Majeure event will be extended by EPA for such time as is necessary to complete those obligations, but in any event, no longer than the period performance was delayed as a result of the Force Majeure event. An extension of the time for performance of the obligations affected by the Force Majeure event shall not, of itself, extend the time for performance of any other unrelated obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused by a Force Majeure event, EPA will notify the Settling Defendants or Owner Settling Defendant, in writing, of its decision. If EPA agrees

that the delay is attributable to a Force Majeure event, EPA will notify the Settling Defendants or Owner Settling Defendant, in writing, of the length of the extension for performance of the obligations affected by the Force Majeure event.

62. If the Settling Defendants or Owner Settling Defendant elect to invoke the dispute resolution procedures set forth in Section XIX (Dispute Resolution) regarding a Force Majeure event, they shall do so no later than fifteen (15) days after receipt of EPA's notice. In any such proceeding, Settling Defendants or Owner Settling Defendant shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a Force Majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Settling Defendants or Owner Settling Defendant, as appropriate, complied with the requirements of Paragraphs 59 and 60 above. If Settling Defendants or Owner Settling Defendant carry this burden, the delay at issue shall be deemed not to be a violation by Settling Defendants or Owner Settling Defendant of the affected obligation of this Consent Decree identified to EPA and, if applicable, the Court.

XIX. DISPUTE RESOLUTION

63. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section

shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree. However, the procedures set forth in this Section shall not apply to actions by the United States to enforce obligations of the Settling Defendants that have not been disputed in accordance with this Section.

64. Any dispute which arises under or with respect to this Consent Decree shall in the first instance be the subject of informal negotiations between the parties to the dispute. The period for informal negotiations shall not exceed twenty (20) days from the time the dispute arises, unless it is modified by written agreement of the parties to the dispute. The dispute shall be considered to have arisen when one party sends the other parties a written Notice of Dispute.

65.a. In the event that the parties cannot resolve a dispute by informal negotiations under the preceding Paragraph, then the position advanced by EPA shall be considered binding unless, within thirty (30) days after the conclusion of the informal negotiation period, Settling Defendants or Owner Settling Defendant invoke the formal dispute resolution procedures of this Section by serving on the United States a written Statement of Position on the matter in dispute, including, but not limited to, any factual data, analysis or opinion supporting that position and any supporting documentation relied upon by the Settling Defendants or Owner Settling Defendant that is not already in the ROD administrative record

or the post-ROD site file. The Statement of Position shall specify the Settling Defendants' or Owner Settling Defendant's position as to whether formal dispute resolution should proceed under Paragraph 66 or Paragraph 67.

b. Within thirty (30) days after receipt of Settling Defendants' or Owner Settling Defendant's Statement of Position, EPA will serve on the appropriate Party its Statement of Position, including, but not limited to, any factual data, analysis, or opinion supporting that position and all supporting documentation relied upon by EPA that is not already in the ROD administrative record or the post-ROD Site file. EPA's Statement of Position shall include a statement as to whether formal dispute resolution should proceed under Paragraph 66 or 67. Within ten (10) days after receipt of EPA's Statement of Position, Settling Defendants or Owner Settling Defendant may submit a Reply.

c. If there is disagreement between EPA and the Settling Defendants or Owner Settling Defendant as to whether dispute resolution should proceed under Paragraph 66 or 67, the parties to the dispute shall follow the procedures set forth in the Paragraph determined by EPA to be applicable. However, if the Settling Defendants or Owner Settling Defendant ultimately appeal to the Court to resolve the dispute, the Court shall determine which Paragraph is applicable in accordance with the standards of applicability set forth in Paragraphs 66 and 67.

66. Formal dispute resolution for disputes pertaining to the selection or adequacy of any response action and all other disputes that are accorded review on the administrative record under applicable principles of administrative law shall be conducted pursuant to the procedures set forth in this Paragraph. For purposes of this Paragraph, the adequacy of any response action includes, without limitation: (1) the adequacy or appropriateness of plans, procedures to implement plans, or any other items requiring approval by EPA under this Consent Decree; and (2) the adequacy of the performance of response actions taken pursuant to this Consent Decree. Nothing in this Consent Decree shall be construed to allow any dispute by Settling Defendants or Owner Settling Defendant regarding the validity of the ROD's provisions.

a. An administrative record of the dispute shall be maintained by EPA and shall contain all statements of position, including supporting documentation, submitted pursuant to this Section. Where appropriate, EPA may allow submission of supplemental statements of position by the parties to the dispute.

b. The Director of the Environmental Cleanup Office, EPA Region 10, will issue a final administrative decision resolving the dispute based on the administrative record described in Paragraph 66.a. This decision shall be binding upon the Settling Defendants and/or Owner Settling Defendant, subject

only to the right to seek judicial review pursuant to subparagraphs c and d of this Paragraph.

c. Any administrative decision made by EPA pursuant to Paragraph 66.b. shall be reviewable by this Court, provided that a motion for judicial review of the decision is filed by the Settling Defendants or Owner Settling Defendant with the Court and served on all Parties within ten (10) days of receipt of EPA's decision. The motion shall include a description of the matter in dispute, the efforts made by the parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of this Consent Decree. The United States may, within fifteen (15) days of receipt of Settling Defendants' or Owner Settling Defendant's motion or such other period as the court may permit, file a response to Settling Defendants' or Owner Settling Defendant's motion.

d. In proceedings on any dispute governed by this Paragraph, Settling Defendants or Owner Settling Defendant shall have the burden of demonstrating that the decision of the Office of Environmental Cleanup Director is arbitrary and capricious or otherwise not in accordance with law. Judicial review of EPA's decision shall be on the administrative record compiled pursuant to subparagraph 66.a.

67. Formal dispute resolution for disputes that neither pertain to the selection or adequacy of any response action nor are otherwise accorded review on the administrative

record under applicable principles of administrative law, shall be governed by this Paragraph.

a. Following receipt of Settling Defendants' or Owner Settling Defendant's Statement of Position submitted pursuant to Paragraph 65, the Director of the Environmental Cleanup Office, EPA Region 10, will issue a final decision resolving the dispute. The Office of Environmental Cleanup Division Director's decision shall be binding on the Settling Defendants or Owner Settling Defendant unless, within ten (10) days of receipt of the decision, the Settling Defendants or Owner Settling Defendant file with the Court and serve on the parties a motion for judicial review of the decision setting forth the matter in dispute, the efforts made by the parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of the Consent Decree. The United States may, within fifteen (15) days of receipt of Settling Defendants' or Owner Settling Defendant's motion or such other period that the court may permit, file a response to Settling Defendants' or Owner Settling Defendant's motion.

b. Notwithstanding Paragraph N of Section I (Background) of this Consent Decree, judicial review of any dispute governed by this Paragraph shall be governed by applicable principles of law.

68. The invocation of formal dispute resolution procedures under this Section shall not extend, postpone or

Penalty Per Violation Per Day	Period of Noncompliance
$ 500	First through the Thirtieth Day
$1,000	Thirty-first through the Sixtieth Day
$3,000	Sixty-first through the Ninetieth Day
$7,000	Ninety-first Day and Beyond

c. Notwithstanding the foregoing, Owner Settling Defendant shall not be subject to Stipulated Penalties for failure to provide EPA with timely notice under Paragraph 28(b) and 29 (including Appendices F and G) so long as ARRC has: (i) timely executed and recorded the Declaration of Restrictive Covenants and Notice of Remedial Action required under Paragraph 28.a.; (ii) imposed the access and use restrictions provided in Paragraph 29.a. as a condition of the transfer; and (iii) placed the language contained in Appendices F or G, or approved modified language, in the conveyance instrument, as required by Paragraphs 29.d. and e. Owner Settling Defendant also shall not be subject to stipulated penalties in the event that any of the access rights, and land and water use restrictions provided in Section IX of this Consent Decree, as supplemented or modified pursuant to this Consent Decree, are determined by a court not to run with the land or bind subsequent owners, transferees, or lessees of the Site.

71. In the event that EPA assumes performance of a portion or all of the Work pursuant to Paragraph 84 of Section XXI (Covenants Not to Sue by Plaintiff) and the costs associated with that Work exceed $25,000, Settling Defendants shall be

liable for a stipulated penalty in the amount of 10% of the cost of the Work incurred by EPA but not to exceed $250,000.

72. All penalties shall begin to accrue on the day after the complete performance is due (for timeliness and notice violations, including but not limited to, submission of deliverables, compliance with any schedule contained in any Work Plan, report, or other plan required under this Consent Decree, and notice required under this Consent Decree) or the day after EPA notifies the Settling Defendants in writing that a violation (other than one based on timeliness) has occurred, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. However, stipulated penalties shall not accrue: (1) with respect to a deficient submission under Section XI (EPA Approval of Plans and Other Submissions), during the period, if any, beginning on the first (1st) day after EPA's receipt of such submission until the date that EPA notifies Settling Defendants in writing of any deficiency; (2) with respect to a decision by the Director of the Office of Environmental Cleanup, EPA Region 10, under Paragraph 66.b. or 67.a. of Section XIX (Dispute Resolution), during the period, if any, beginning on the eleventh (11th) day after the date that Settling Defendants' (i) reply to EPA's Statement of Position is received (for decisions under Paragraph 66.b.) or (ii) statement of position under Paragraph 65 is received (for decisions under Paragraph 67.a.) until the date that the Director issues a final decision regarding such dispute;

or (3) with respect to judicial review by this Court of any dispute under Section XIX (Dispute Resolution), during the period, if any, beginning on the 31st day after the date the Settling Defendants or Owner Settling Defendants file the motion for judicial review until the date that the Court issues a final decision regarding such dispute. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Consent Decree.

73. Following EPA's determination that Settling Defendants or Owner Settling Defendant have failed to comply with a requirement of this Consent Decree, EPA shall give Settling Defendants or Owner Settling Defendant written notification of the same and describe the noncompliance. EPA shall send the Settling Defendants or Owner Settling Defendant a written demand for the payment of the penalties. Except for violations based on timeliness and noncompliance with a known due date or trigger event as contained in Paragraph 72, penalties shall not accrue as provided in the preceding Paragraph until EPA has notified the Settling Defendants or Owner Settling Defendant in writing of a violation.

74. All penalties accruing under this Section shall be due and payable to the United States within thirty (30) days of the Settling Defendants' or Owner Settling Defendant's receipt from EPA of a demand for payment of the penalties, unless the appropriate Parties invoke the Dispute Resolution procedures under Section XIX (Dispute Resolution). All payments to the

United States under this Section shall be paid by certified or cashier's check(s) made payable to "EPA Hazardous Substances Superfund," shall be mailed to:

Mellon Bank
EPA-Region 10
Attn: Superfund Accounting
P.O. Box 360903M
Pittsburgh, PA 15251

and shall indicate that the payment is for stipulated penalties, and shall reference the EPA Region and Site/Spill ID #102P, the DOJ Case Number 90-11-3-810, and the name and address of the party making payment. Copies of check(s) paid pursuant to this Section, and any accompanying transmittal letter(s), shall be sent to the United States as provided in Section XXVI (Notices and Submissions), and to Joseph Penwell, Finance Unit, Office of Management Programs, Mail Stop OMP-146, 1200 Sixth Avenue, Seattle, Washington, 98101. In the alternative, Settling Defendants shall make payments required by this Paragraph to the EPA Hazardous Substance Superfund by FedWire Electronic Funds Transfer. Wire transfer instructions will be provided by EPA upon request.

75. The payment of penalties shall not alter in any way Settling Defendants' obligation to complete the performance of the Work specifically agreed to by them in this Consent Decree or Owner Settling Defendant's obligation to perform the Institutional Controls required by Section IX.

76. Penalties shall continue to accrue as provided in Paragraphs 72 and 73 during any dispute resolution period, but need not be paid until one of the following events occur:

a. If the dispute is resolved by agreement or by a decision of EPA that is not appealed to this Court, accrued penalties determined to be owing shall be paid to EPA within fifteen (15) days of the agreement or the receipt of EPA's decision or order;

b. If the dispute is appealed to this Court and the United States prevails in whole or in part, Settling Defendants or Owner Settling Defendant shall pay all accrued penalties determined by the Court to be owed to EPA within sixty (60) days of receipt of the Court's decision or order, except as provided in Subparagraph c below;

c. If the District Court's decision is appealed by any Party, Settling Defendants or Owner Settling Defendant shall pay all accrued penalties determined by the District Court to be owing to the United States into an interest-bearing escrow account within sixty (60) days of receipt of the Court's decision or order. Penalties shall be paid into this account as they continue to accrue, at least every sixty (60) days. Within fifteen (15) days of receipt of the final appellate court decision, the escrow agent shall pay the balance of the account to EPA or to Settling Defendants or Owner Settling Defendant to the extent that they prevail, as determined by the appellate court.

77.a. If Settling Defendants or Owner Settling Defendant fail to pay stipulated penalties when due, the United States may institute proceedings to collect the penalties, as well as Interest. Settling Defendants or Owner Settling Defendant shall pay Interest on the unpaid balance, which shall begin to accrue on the date of demand made pursuant to Paragraph 74.

b. Nothing in this Consent Decree shall be construed as prohibiting, altering, or in any way limiting the ability of the United States to seek any other remedies or sanctions available by virtue of Settling Defendants' or Owner Settling Defendant's violation of this Decree or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 122(l) of CERCLA, 42 U.S.C. § 9622(l). Provided, however, that the United States shall not seek civil penalties pursuant to Section 122(l) of CERCLA, 42 U.S.C. § 9622(l), for any violation for which a stipulated penalty is provided herein, except in the case of a willful violation of the Consent Decree.

78. Notwithstanding any other provision of this Section, the United States may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Consent Decree.

XXI. COVENANTS NOT TO SUE BY PLAINTIFF

79. In consideration of the actions that will be performed and the payments that will be made by the Settling Defendants and, where applicable, the Owner Settling Defendant, under the terms of the Consent Decree, and except as specifically provided in Paragraphs 80, 81, and 83 of this Section, the United States covenants not to sue or to take administrative action against Settling Defendants and Owner Settling Defendant pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a), relating to the Site. These covenants not to sue shall take effect with respect to future liability upon Certification of Completion of Remedial Action by EPA pursuant to Paragraph 50 of Section XIV (Certification of Completion). These covenants not to sue are conditioned upon the satisfactory performance by Settling Defendants and Owner Settling Defendant of their obligations under this Consent Decree. These covenants not to sue extend only to the Settling Defendants and Owner Settling Defendant and do not extend to any other person.

80. United States' Pre-certification reservations. Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings before the Court in this action or in a new action, or to issue an administrative order seeking to compel Settling Defendants to perform further response actions relating to the Site or to reimburse the United States for additional costs of response and/or to compel Owner

Settling Defendant to perform Supplemental Institutional Controls that only it can perform as the party in possession and control of the property if, prior to Certification of Completion of the Remedial Action:

(i) conditions at the Site, previously unknown to EPA, are discovered; or

(ii) information, previously unknown to EPA, is received, in whole or in part;

and these previously unknown conditions or information together with any other relevant information indicates that the Remedial Action is not protective of human health or the environment.

81. United States' Post-certification reservations. Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings before the Court in this action or in a new action, or to issue an administrative order seeking to compel Settling Defendants to perform further response actions relating to the Site or to reimburse the United States for additional costs of response and/or to compel Owner Settling Defendant to perform Supplemental Institutional Controls that only it can perform as the party in possession and control of the property if, subsequent to Certification of Completion of the Remedial Action:

(i) conditions at the Site, previously unknown to EPA, are discovered; or

(ii) information, previously unknown to EPA, is received, in whole or in part;

and these previously unknown conditions or this information together with other relevant information indicate that the Remedial Action is not protective of human health or the environment.

82. For purposes of Paragraph 80, the information and the conditions known to EPA shall include only that information and those conditions known to EPA as of the date the ROD was signed and set forth in the Record of Decision for the Site and the administrative record supporting the Record of Decision. For purposes of Paragraph 81, the information and the conditions known to EPA shall include only that information and those conditions known to EPA as of the date of Certification of Completion of the Remedial Action and set forth in the Record of Decision, the administrative record supporting the Record of Decision, the post-ROD administrative record, or in any information received by EPA pursuant to the requirements of this Consent Decree prior to Certification of Completion of the Remedial Action.

83.a. General reservations of rights. The covenants not to sue set forth above do not pertain to any matters other than those expressly specified in Paragraph 79. The United States reserves, and this Consent Decree is without prejudice to, all rights against Settling Defendants with respect to all other matters, including but not limited to, the following:

(1) claims based on a failure by Settling Defendants to meet a requirement of this Consent Decree;

(2) claims seeking, or liability for, the securing and implementation of Supplemental Institutional Controls, and liability for any response costs incurred relating to the implementation or securing of Supplemental Institutional Controls;

(3) liability arising from the past, present, or future disposal, release, or threat of release of Waste Materials outside of the Site;

(4) liability for future disposal of Waste Material at the Site, other than as provided in the ROD, the Work Plan, or otherwise ordered or approved in writing by EPA;

(5) liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;

(6) criminal liability;

(7) liability for violations of federal or state law which occur during or after implementation of the Remedial Action; and

(8) liability, prior to Certification of Completion of the Remedial Action, for additional response actions that EPA determines are necessary to achieve Performance Standards, but that cannot be required pursuant to Paragraph 15 (Modification of the SOW or Related Work Plans).

b. With respect to the Owner Settling Defendant, the covenants not to sue set forth above do not pertain to any matters other than those expressly specified in Paragraph 79. The United States reserves, and this Consent Decree is without prejudice to, all rights against Owner Settling Defendant with respect to all other matters, including but not limited to, the following:

(1) claims based on a failure by Owner Settling Defendant to meet a requirement of this Consent Decree;

(2) claims seeking, or liability for, the securing and implementation of Supplemental Institutional Controls that only Owner Settling Defendant, as the party in possession and control of the property can perform, and liability for any response costs incurred relating to the implementation or securing of such Supplemental Institutional Controls;

(3) liability arising from the past, present, or future disposal, release, or threat of release of Waste Materials outside of the Site;

(4) liability for future disposal of Waste Material at the Site, other than as provided in the ROD, the Work Plan, or otherwise ordered or approved in writing by EPA;

(5) criminal liability; and

(6) liability for violations of federal or state law which occur during or after implementation of the Remedial Action.

84. Work Takeover. In the event EPA determines that Settling Defendants and, with respect to implementation of Institutional Controls contained in Section IX of this Consent Decree only, Owner Settling Defendant have ceased implementation of any portion of the Work or Institutional Controls (except as a result of a Force Majeure event), are seriously or repeatedly deficient or late in their performance of the Work or Institutional Controls, or are implementing the Work or Institutional Controls in a manner which may cause an endangerment to human health or the environment, EPA may assume the performance of all or any portions of the Work or may seek to enforce such Institutional Controls required by Section IX as EPA determines necessary. Settling Defendants and Owner Settling Defendant may invoke the procedures set forth in Section XIX (Dispute Resolution), Paragraph 66 only, to dispute EPA's determination that takeover of the Work or Institutional Controls is warranted under this Paragraph. Costs incurred by the United States in performing the Work and Institutional Controls pursuant to this Paragraph shall be considered Future Response Costs that Settling Defendants shall pay pursuant to Section XVI (Reimbursement of Response Costs).

85. Notwithstanding any other provision of this Consent Decree, the United States retains all authority and reserves all rights to take any and all response actions authorized by law.

XXII. COVENANTS BY SETTLING DEFENDANTS AND OWNER SETTLING DEFENDANT

86. Covenant Not to Sue. Subject to the reservations in subparagraph 86.d., Settling Defendants and Owner Settling Defendant hereby covenant not to sue and agree not to assert any claims or causes of action against the United States with respect to the Site, and Future Response Costs as defined herein, or this Consent Decree, including, but not limited to:

a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund (established pursuant to the Internal Revenue Code, 26 U.S.C. § 9507) through CERCLA Sections 106(b)(2), 107, 111, 112, 113, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, 9613, or any other provision of law;

b. any claims against the United States, including any department, agency or instrumentality of the United States under CERCLA Sections 107 or 113, 42 U.S.C. §§ 9607 or 9613, related to the Site; or

c. any claims arising out of response activities at the Site, including claims based on EPA's selection of response actions, oversight of response activities or approval of plans for such activities.

d. Notwithstanding the provisions of Paragraph 86.a., Owner Settling Defendant reserves any right it may have to pursue the claim it has asserted against the United States as provided in Paragraphs 12.b. and 20.c. of the Partial Consent Decree.

e. The Settling Defendants reserve, and this Consent Decree is without prejudice to, claims against the United States, subject to the provisions of Chapter 171 of Title 28 of the United States Code, for money damages for injury or loss of property or personal injury or death caused by the negligent or wrongful act or omission of any employee of the United States while acting within the scope of his office or employment under circumstances where the United States, if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred. However, any such claim shall not include a claim for any damages caused, in whole or in part, by the act or omission of any person, including any contractor, who is not a federal employee as that term is defined in 28 U.S.C. § 2671; nor shall any such claim include a claim based on EPA's selection of response actions, or the oversight or approval of the Settling Defendants' plans or activities. The foregoing applies only to claims which are brought pursuant to any statute other than CERCLA and for which the waiver of sovereign immunity is found in a statute other than CERCLA;

87. Nothing in this Consent Decree shall be deemed to constitute preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

88. In consideration of the mutual obligations undertaken and the payments to be made by the Settling Defendants and Owner Settling Defendant under the terms of this Consent

Decree, each of the Settling Defendants and Owner Settling Defendant covenants not to sue any other Settling Defendant or Owner Settling Defendant for contribution pursuant to Sections 107 or 113 of CERCLA, 42 U.S.C. §§ 9607 or 9613, any provision of the Resource Conservation and Recovery Act, state statutory or common law, or any other provision of law with respect to the Site, including, without limitation, contribution claims relating to the Work, this Consent Decree or payment of or liability for Future Costs, as that term is defined in Section IV of the Partial Consent Decree, provided, however, that as to each Settling Defendant and Owner Settling Defendant, these covenants are conditioned on performance by each Settling Defendant and the Owner Settling Defendant of the obligations undertaken by each under this Consent Decree and payment of its allocated share of the costs of the Work. These covenants not to sue extend only to the Settling Defendants and Owner Settling Defendant and not to any other persons or entities.

XXIII. EFFECT OF SETTLEMENT; CONTRIBUTION PROTECTION

89. Nothing in this Consent Decree shall be construed to create any rights in, or grant any cause of action to, any person not a Party to this Consent Decree. The preceding sentence shall not be construed to waive or nullify any rights that any person not a signatory to this decree may have under applicable law. Each of the Parties expressly reserves any and all rights (including, but not limited to, any right to

contribution), defenses, claims, demands, and causes of action which each Party may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a Party hereto.

90. The Parties agree, and by entering this Consent Decree this Court finds, that the Settling Defendants and Owner Settling Defendant are entitled, as of the Effective Date of this Consent Decree, to protection from contribution actions or claims as provided by CERCLA Section 113(f)(2), 42 U.S.C. § 9613(f)(2), for matters addressed in this Consent Decree.

91. The Settling Defendants and Owner Settling Defendant agree that with respect to any suit or claim for contribution brought by them for matters related to this Consent Decree they will notify the United States, in writing, no later than sixty (60) days prior to the initiation of such suit or claim.

92. The Settling Defendants and Owner Settling Defendant also agree that with respect to any suit or claim for contribution brought against them for matters related to this Consent Decree they will notify the United States in writing within ten (10) days of service of the complaint on them. In addition, Settling Defendants and Owner Settling Defendant shall notify the United States within ten (10) days of service or receipt of any Motion for Summary Judgment and within ten (10) days of receipt of any order from a court setting a case for trial of matters related to this Consent Decree.

93. In any subsequent administrative or judicial proceeding initiated by the United States for injunctive relief, recovery of response costs, or other appropriate relief relating to the Site, Settling Defendants and Owner Settling Defendant shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States in the subsequent proceeding were or should have been brought in the instant case; provided, however, that nothing in this Paragraph affects the enforceability of the covenants not to sue set forth in Section XXI (Covenants Not to Sue by Plaintiff).

XXIV. ACCESS TO INFORMATION

94. Subject to the terms of Paragraph 95, Settling Defendants and Owner Settling Defendant shall provide to EPA, upon request, copies of all documents and information within their possession or control or that of their contractors or agents relating to activities at the Site or to the implementation of this Consent Decree, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Settling Defendants and Owner Settling Defendant shall also make available to EPA, for purposes of investigation,

information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

95.a. Settling Defendants and Owner Settling Defendant may assert business confidentiality claims covering part or all of the documents or information submitted to Plaintiff under this Consent Decree to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when they are submitted to EPA, or if EPA has notified Settling Defendants or Owner Settling Defendant in writing that the documents or information are not confidential under the standards of Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), the public may be given access to such documents or information without further notice to Settling Defendants or Owner Settling Defendant.

b. The Settling Defendants and Owner Settling Defendant may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege or doctrine recognized by federal law. If the Settling Defendants or Owner Settling Defendant assert such a privilege in lieu of providing documents, they shall provide the Plaintiff with the following: (1) the title of the document, record, or information; (2) the date of the document, record, or

information; (3) the name and title of the author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the contents of the document, record, or information: and (6) the privilege asserted by Settling Defendants. However, no documents, reports or other information created or generated pursuant to the requirements of the Consent Decree shall be withheld on the grounds that they are privileged.

96. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the Site.

XXV. RETENTION OF RECORDS

97. Settling Defendants and Owner Settling Defendant agree that records and documents within their possession or control that relate in any manner to the performance of the Work or liability of any person for response actions conducted or to be conducted at the Site shall be retained in accordance with Section VIII of the Partial Consent Decree.

98. Each Settling Defendant and Owner Settling Defendant hereby certify individually that, to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information relating to its potential

liability regarding the Site since notification of potential liability by the United States or the filing of suit against it regarding the Site and that it has fully complied with any and all EPA requests for information pursuant to Section 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927.

XXVI. NOTICES AND SUBMISSIONS

99. Whenever, under the terms of this Consent Decree, written notice is required to be given or a report or other document is required to be sent by one Party to another, it shall be directed to the individuals at the addresses specified below, unless those individuals or their successors give notice of a change to the other Parties, in writing. All notices and submissions shall be considered effective upon receipt, unless otherwise provided. Written notice as specified herein shall constitute complete satisfaction of any written notice requirement of the Consent Decree with respect to the United States, EPA, the Settling Defendants, and Owner Settling Defendant respectively.

As to the United States:

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Ben Franklin Station
Washington, D.C. 20044-7611
Re: DJ # 90-11-3-810

As to EPA:

Lori L. Houck
Office of Regional Counsel
U.S. EPA, Region 10
ORC-158
1200 Sixth Avenue
Seattle, Washington 98101

Christopher Cora
EPA Project Coordinator
U.S. EPA, Region 10
ECL-114
1200 Sixth Avenue
Seattle, Washington 98101

As to the State:

Jennifer Roberts
State Project Coordinator
Alaska Department of Environmental Conservation
555 Cordova Street, Second Floor
Anchorage, Alaska 99501-2617

As to the Settling Defendants:

Alex Tula
Alta Geosciences, Inc.
11711 Northcreek Parkway South, Suite 101
Bothell, WA 98011-8224

As to the Owner Settling Defendant

Phyllis C. Johnson, Esq.
General Counsel
Alaska Railroad Corporation
P.O. Box 107500
327 W. Ship Creek Avenue
Anchorage, Alaska 99501

As to the Federal PRPs:

Bruce Noble
Defense Reutilization and Marketing Service
ATTN: DRMS-FHO
Federal Center 74 N. Washington Avenue
Battle Creek, MI 49017-3092

XXVII. EFFECTIVE DATE

100. The Effective Date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court, except as otherwise provided herein.

XXVIII. RETENTION OF JURISDICTION

101. This Court retains jurisdiction over both the subject matter of this Consent Decree and the Settling Defendants and Owner Settling Defendant for the duration of the performance of the terms and provisions of this Consent Decree for the purpose of enabling any of the Parties to apply to the Court at any time for such further order, direction, and relief as may be necessary or appropriate for the construction or modification of this Consent Decree, or to effectuate or enforce compliance with its terms, or to resolve disputes in accordance with Section XIX (Dispute Resolution) hereof.

XXIX. APPENDICES

102. The following appendices are attached to and incorporated into this Consent Decree:

"Appendix A" is the ROD.

"Appendix B" is the SOW.

"Appendix C" is the legal description of the Site.

"Appendix D" is a map of the Site.

"Appendix E" is Declaration of Restrictive Covenants and Notice of Remedial Action.

"Appendix F" is the Reservation of Access Easement and Restrictions on Use.

"Appendix G" is the Lease Prohibitions.

XXX. COMMUNITY RELATIONS

103. Settling Defendants shall propose to EPA their participation in the community relations plan to be developed by EPA. EPA will determine the appropriate role for the Settling Defendants under the Plan. Settling Defendants shall also cooperate with EPA in providing information regarding the Work to the public. As requested by EPA, Settling Defendants shall participate in the preparation of such information for dissemination to the public and in public meetings which may be held or sponsored by EPA to explain activities at or relating to the Site.

XXXI. MODIFICATION

104. Schedules specified in this Consent Decree for completion of the Work may be modified by agreement of EPA and the Settling Defendants. All such modifications shall be made in writing.

105. Except as provided in Paragraph 14 ("Modification of the SOW or related Work Plans"), no material modifications shall be made to the SOW without written notification to and written approval of the United States, Settling Defendants, and Owner Settling Defendant. The dispute resolution provisions in Section XIX. of this Consent Decree shall apply to this

unless each and every Settling Defendant and Owner Settling Defendant has duly executed this Consent Decree.

109. If for any reason the Court should decline to approve this Consent Decree in the form presented, this agreement is voidable at the sole discretion of any Party and the terms of the agreement may not be used as evidence in any litigation between the Parties.

XXXIII. SIGNATORIES/SERVICE

110. Each undersigned representative of a Settling Defendant and Owner Settling Defendant to this Consent Decree and the Assistant Attorney General for Environment and Natural Resources of the Department of Justice certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind such Party to this document.

111. Each Settling Defendant and Owner Settling Defendant hereby agrees not to oppose entry of this Consent Decree by this Court or to challenge any provision of this Consent Decree unless the United States has notified the Settling Defendants and Owner Settling Defendant, in writing, that it no longer supports entry of the Consent Decree.

112. Each Settling Defendant and Owner Settling Defendant shall identify, on the attached signature page, the name, address, and telephone number of an agent who is authorized to accept service of process by mail on behalf of that Party with

respect to all matters arising under or relating to this Consent Decree. Settling Defendants and Owner Settling Defendant hereby agree for purposes of this action to accept service in that manner and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure and any applicable local rules of this Court, including, but not limited to, service of a summons.

SO ORDERED THIS 24th DAY OF January, 1998.

John W. Sedwick
United States District Judge

A91-0589--CV (JWS)

B. BOOKMAN (PERKINS)
C. JOHNSON
J. LINXWILER (GUESS)
P. JOHNSON
J. REECE
M. CARTER (US-ATTNY)

THE UNDERSIGNED PARTIES enter into this Consent Decree in the matter of United States v. Alaska Railroad corporation et. al., relating to the Standard Steel & Metals Salvage Yard Superfund Site.

FOR THE UNITED STATES OF AMERICA

LOIS J. SCHIFFER
Assistant Attorney General
Environment & Natural Resources Division

Dated: 10/6/97

JOEL M. GROSS, Chief
Environmental Enforcement Section
U. S. Department of Justice
Washington, D. C. 20530

Dated: 10/8/97

for REGINA R. BELT, Attorney
Environmental Enforcement Section
801 B Street, Suite 504
Anchorage, Alaska 99501-3657

CHUCK CLARKE
Regional Administrator, Region 10
U.S. Environmental ProtectionAgency
1200 Sixth Avenue
Seattle, Washington 98101

LORI L. HOUCK
Assistant Regional Counsel
U.S. Environmental ProtectionAgency
Region 10, ORC-158
1200 Sixth Avenue
Seattle, Washington 98101

FOR THE DEFENDANTS:

For the Alaska Railroad Corporation:

Dated: 8/25/97

William J. Sheffield, ~~Chairman of the~~ Board of Directors
President & CEO

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Phyllis Johnson
General Counsel
Alaska Railroad Corporation
P.O. Box 107500
Anchorage, Alaska 99510-7500

For Bridgestone/Firestone, Inc.:

Dated: 2-20-97

James K. Vines
General Counsel
Environmental

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Heidi H. Bumpers, Esq.
Jones, Day, Reavis & Pogue
Metropolitan Square
1450 "G" Street, N.W. Suite 700
Washington, D.C. 20005-2088

For Chugach Electric Association, Inc.:

Dated: August 22, 1997

Eugene N. Bjornstad
General Manager

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Eugene N. Bjornstad
General Manager
Chugach Electric Association, Inc.
5601 Minnesota Drive
P.O. Box 196300
Anchorage, Alaska 99519-6300

For J. C. Penney Company, Inc.:

Dated: August 20, 1997

William H. Baxley, III
Manager of Risk Management

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Guess & Rudd
510 L Street, Suite 700
Anchorage, Alaska 99501

For Sears, Roebuck and Co.:

Dated: 5/25/97

William H. Baker
Assistant General Counsel-Complex Lit.
Sears, Roebuck and Co.

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Frederick J. Kulevich
Attorney
Sears, Roebuck and Co.
3333 Beverly Road
Hoffman Estates, Illinois 60179

For Westinghouse Electric Corporation:

Dated: August 25, 1997

Louis J. Briskman
Senior Vice President and General Counsel

Agent Authorized to Accept Service on Behalf of Above-signed Party:

C T Corporation System
Suite 300
801 West Tenth Street
Juneau, Alaska 99801

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 6TH AVENUE
SEATTLE, WASHINGTON

RECORD OF DECISION

DECLARATION,
DECISION SUMMARY,
AND
RESPONSIVENESS SUMMARY

FOR

FINAL REMEDIAL ACTION
STANDARD STEEL AND METALS SALVAGE YARD
SUPERFUND SITE
ANCHORAGE ALASKA

RECORD OF DECISION
STANDARD STEEL AND METALS
SALVAGE YARD SUPERFUND SITE
ANCHORAGE, ALASKA

DECLARATION

Site Name and Location
Standard Steel and Metals Salvage Yard
Anchorage Alaska

Statement of Basis and Purpose

This decision document presents the selected remedial action for the Standard Steel and Metals Salvage Yard, in Anchorage, Alaska, which was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the administrative record for this site.

The State of Alaska concurs with the selected remedy.

Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare, or the environment.

Description of the Selected Remedy

This is the final remedial action for the site. The site was not divided into operable units. EPA conducted a Removal Action to address the principle threats and most imminent sources of continued releases of hazardous substances, and to stabilize the site prior to conducting this remedial action. The Removal Action utilized treatment as a principle element for the principle sources.

The selected remedy entails the following major components:

- Removal of regulated material stockpiled on-site and investigation derived wastes with subsequent disposal in a RCRA Subtitle C or D landfill, or recycling of materials;
- Off-site disposal of remaining scrap debris by recycling or disposal in a RCRA Subtitle D landfill or, if the debris is a characteristic hazardous waste or contains greater than 50 mg/kg PCBs or 10ug/100cm^2 by

standard wipe tests, treatment and disposal in a RCRA Subtitle C or TSCA landfill;

- Excavation and consolidation of all soils exceeding cleanup levels;
- Treatment of all soils at or greater than 1000 mg/kg lead and 50 mg/kg PCB by stabilization/solidification;
- On-site disposal of stabilized/solidified soils and excavated soils between 10 mg/kg and 50 mg/kg in a TSCA landfill;
- Excavation of soils impacted above 1mg/kg PCB's and 500 mg/kg lead from the flood plain and consolidation of these soils elsewhere on the site;
- Maintenance and Repair of erosion control structure on bank of Ship Creek;
- Maintenance of solidified/stabilized soils and the landfill;
- Institutional controls to limit land uses of the site and, if appropriate, access;
- Monitoring of groundwater at the site to ensure the effectiveness of the remedial action.

Statutory Determinations

The selected remedy is protective of human health and the environment, complies with or justifies a waiver of Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable, and satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element.

Because this remedy will result in hazardous substances remaining on-site above health based levels, a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Chuck Clarke

7/16/96

Chuck Clarke
Regional Administrator
U.S. Environmental Protection Agency
Region 10

Date

RECORD OF DECISION
STANDARD STEEL AND METALS SALVAGE YARD
DECISION SUMMARY
AND
RESPONSIVENESS SUMMARY

TABLE OF CONTENTS

FIGURES AND TABLES (Attached at the End of Record of Decision)

RESPONSIVENESS SUMMARY

RECORD OF DECISION

STANDARD STEEL AND METALS SALVAGE YARD

1.0 SITE NAME, LOCATION, AND DESCRIPTION

1.1 Site Name

Standard Steel and Metals Salvage Yard

1.1.1 Site Location and Description

Standard Steel and Metals Salvage Yard (site) is located on a 6.2 acre parcel of land in Anchorage, Alaska, near the intersection of Railroad Avenue and Yakutat Street. The site is owned by the Federal Railroad Administration and in the possession and control of the Alaska Railroad Corporation. The site is situated in an industrialized area of Anchorage along the north side of lower Ship Creek (Figure 1-1). A warehouse is located directly north of the site. To the east are assorted light industries, warehouses and a produce packing facility, and to the west is a steel fabrication operation. Approximately 500 feet upstream of the site is the Elmendorf Fish Hatchery and the Eagle Glen Golf Course on Elmendorf Air Force Base. Non-adjacent land use is comprised of assorted light industry and the Alaska Railroad Corporation's rail yard.

The site has been cleared of most scrap metal and debris during previous CERCLA activities (see Section 2.0). There is a small stand of cottonwoods and small brush adjacent to Ship Creek, otherwise the site is covered with gravel/fill. The site was contaminated during 30 years of salvage operations, primarily by releases from lead acid batteries and PCB contaminated transformers. The site consists of all areas contaminated by PCBs and lead which resulted from activities at the Standard Steel and Metals Salvage Yard. These areas are defined in the remedial investigation and generally conform to the property boundaries.

1.2 Topography

The site is situated on a gently sloping outwash plain. The ground surface elevation ranges from approximately 70 to 80 feet above mean sea level. The site is built upon the reclaimed flood plain of Ship Creek. Ship Creek defines the southern border of the site. The site extends into Ship Creek's 100 year flood plain on the south-western corner of the site. A preservation wetland is also located in the south-western corner of the site (Figure 1-2). Review of historical aerial photographs showed that significant areas of the site have been excavated and subsequently filled to raise the surface elevation of the site to its current height of between 70 and 80 feet above sea level.

1.3 Zoning

The areas from Reeve Boulevard to Knik Arm surrounding Ship Creek and enclosing the site are zoned I-2, denoting a heavy industrial district. The areas south of this district (beginning 1/4 mile from the site) are zoned as business districts, light industrial districts, and public lands and institution districts. The area to the north (1/3 mile from the site) is reserved for the military.

The Municipality of Anchorage has adopted a land use plan that reflects and continues the current zoning of this area. The site, as well as all lands west of Reeve Avenue, south of Post Road, east of Wrangell Street and north of Ship Creek, is currently managed and controlled by the Alaska Railroad Corporation (ARRC) pursuant to an exclusive license issued by the United States under the authority of an act of Congress, the Alaska Railroad Transfer Act of 1983. ARRC assumed control of these properties from the United States government on January 5, 1985. The underlying property owner of the site is the United States, pending eventual transfer to ARRC as contemplated by that Act. The ARRC is a public corporation owned by the State of Alaska. ARRC has publicly taken the position that the zoning of the site and surrounding areas should remain industrial. An active rail line is located along Post Road, with a spur that connects the site to the main line.

1.4 Natural Resource Uses

1.4.1 Terrestrial Resources

The site has limited terrestrial natural resources. It was used during the 1950's as a gravel mine. There is very limited vegetation and habitat on the site. Small rodents, passerines and gulls have been observed on the site. Moose have been seen adjacent to the site along Ship Creek.

1.4.2 Aquatic Resources

The quantity and variety of fish in Ship Creek is dependent upon stocking, harvesting and environmental factors. Status of the stock is measured by fish harvest reports by the Alaska Department of Fish & Game. The only data collected on native fish of Ship Creek are from the annual harvest reports and visual fish counts, which concentrate on the chinook and coho species. In relation to the total numbers of chinook and coho in Ship Creek in any given year, it is important to note the regulated nature of fish stocking. Many variables influence the decision regarding the number of chinook and coho smelt to stock into Ship Creek each year; this, in turn, affects the total number of returning adults. Approximately 5 percent of chinook smelt and approximately 5-15 percent of coho smelt return to Ship Creek as adults. It is estimated that roughly twenty percent of both returning coho and chinook are of native stock. Small numbers of pink and chum salmon may also use Ship Creek.

1.4.3 Endangered Species/Wetlands

No threatened or endangered species have been observed at the site. The site has been heavily disturbed throughout it's history and provides little preferred or suitable habitat. A small wetland is located on the south-west boundary of the site. This area has not been contaminated by site activities. Threatened or endangered species which may be in the vicinity of the site are highly unlikely to utilize the site for feeding, resting, or propagating.

1.5 Location and Distance to Nearby Human Populations

The area around the site is dedicated to industrial/commercial use. The nearest residential area is located 1/2 mile south-east of the site on the other side of Ship Creek in the Mountainview area. Military housing at Elmendorf Air Force Base is located 1/3 mile north-east of the site. Population figures for the area in the immediate vicinity are not available. However, 1990 Anchorage Census Tracts 5 and 6, which cover the site and a large surrounding area including Mountainview residential area, contained 7,188 people. An unknown number of homeless adults are reported to live along Ship Creek and the Bluff north of the site during summer months.

1.6 General Surface-water, Groundwater Resources and Geology

1.6.1 Ship Creek Stage

The lower Ship Creek drainage basin covers roughly 27 square miles. The creek traverses approximately 10 miles from the Chugach Mountains to Cook Inlet. The site is located along the north bank of Ship Creek, approximately 2 miles upstream from the mouth. Ship Creek flows south and west adjacent to the site.

The U.S. Army Corp of Engineers (Alaska District) personnel made numerous cross section measurements (August 1976) in order to project possible flood magnitude in the area. Floodway boundaries were computed for each cross section with the HEC-2 computer program. The projected 100-year flood plain area is depicted on Figure 1-2.

1.6.2 Surface Water Runoff

A site map based on the topographic site survey is presented as Figure 1-2. The site is relatively flat, sloping slightly to the south with an average slope of less than 3 percent. Surface water drainage from the site appears to be variable, with the majority of precipitation infiltrating the soil rather than forming discrete runoff patterns. Only a single potential drainage channel leading from the site has been observed to date, but surface water has never been observed in the channel, and it is blocked by an earthen berm before it reaches Ship Creek. It is located outside of and approximately parallel to the fence along the south of the site. The slope in this channel appears to trend

southwesterly and eventually joins the fairly pronounced gully southwest of the site which is visible on the site map (Figure 1-2). This gully heads toward Ship Creek downstream of the site.

Although the snow melted within a relatively short period of time during the spring of 1993, no surface runoff from the site to the creek or to surrounding properties was observed, except for a small amount flowing for several days southwest into the adjacent property. This surface runoff infiltrated into the soil soon after entering that property; no runoff to the creek was observed.

Available municipal and railroad records do not indicate existence of storm sewers that drain surface runoff from the site. Field teams did not find any storm sewer grates at the site or other water conduits down gradient of the site, except for a culvert near Yakutat Street, which drains a storm sewer on the northeast corner of Yakutat and Railroad Avenues.

1.6.3 Geology

The site is located in the Anchorage lowland area within the upper Cook Inlet region of Alaska. The lowland areas of the Cook Inlet region are surrounded by several heavily glaciated mountain ranges, including the Alaska, Talkeetna, Chugach, and Kenai Ranges. Unconsolidated glacial deposits, which are typical of the lowland areas surrounding Cook Inlet, have been deposited and reworked by three main agents: glacial ice; flowing water in streams or deltas; and still water in ponds, lakes and marine estuaries.

Several glacial events in the Cook Inlet area resulted in deposition of thick sequences of unconsolidated fine-grained glacial sediments in glacially-dammed lakes. The outwash from these glaciers has deposited rock flour and silt in the lowlands, producing large areas of mud flats along the Cook Inlet shoreline. These silt-rich deposits discontinuously overlay glacial and glacial fluvial materials. The lowland deposits are bordered by uplands or glacial moraine and drift deposits. The site is located in an active seismic area.

1.6.4 Regional Groundwater Conditions

The area commonly referred to as the Anchorage Bowl encompasses approximately 180 square miles and includes the site and most of the urban area of Anchorage. This area is bounded on the north, west and south by two estuaries, the Knik and Turnagain Arms of Cook Inlet, and on the east by the Chugach foothills. Two aquifers have been identified in this area separated by a thick aquitard (the Bootlegger Cove Formation). These aquifers are distinguished by their relatively coarse lithologies and capacity to transmit groundwater horizontally. An unconfined aquifer is located in the deposits above the Bootlegger Cove Formation and a confined aquifer is located in the deposits

below the Bootlegger Cove Formation. The existence of potential water-bearing units beneath the confined aquifer at the site was not investigated.

The Bootlegger Cove Formation has been identified as an effective aquitard based on its relatively fine-grained lithology, thickness, and continuous areal extent over the study area. This aquitard is an important feature of the hydrogeologic model, because it impedes vertical groundwater flow and chemical transport. The three units are described below.

1.6.5 Unconfined Aquifer

An unconfined aquifer is located in a sheet of outwash plain deposits (chiefly sand and gravel) that covers much of the northeast, central and western parts of the Anchorage area. This aquifer generally extends from the flanks of the Chugach foothills on the east to Cook Inlet, including the Turnagain and Knik Arms, on the north, west and south. This aquifer consists of sand and gravel lenses intermixed with silty sand and gravel. In the vicinity of the site the aquifer is approximately 25 feet thick. This aquifer is naturally recharged by rain, snowmelt and leakage from streams. Groundwater flows to the south west with some water discharging to Ship Creek and the remainder to Cook Inlet.

1.6.6 Bootlegger Cove Formation Aquitard

The Pleistocene Bootlegger Cove Formation is a low permeability clay unit that underlies most of the Anchorage area. This unit is up to 270 feet thick and generally thickens with increasing distance from the mountains. In the vicinity of the site, the aquitard is 100 to 150 feet thick.

The aquitard consists of saturated, clayey glacially-derived sediments of very low permeability. Permeability tests were performed on five samples collected from the Bootlegger Cove Formation at the site and resulted in hydraulic conductivity values ranging from 0.0006 to 0.002 ft/day (2.1×10^{-7} to 7.0×10^{-7} cm/sec). These estimated hydraulic conductivity values are consistent with the regional value (0.0001 ft/day).

1.6.7 Confined Aquifer

The confined aquifer is composed of several layers of interbedded sand and gravel, till, and silty clay deposits. The more permeable sand and gravel layers are hydraulically connected and are considered to be a single aquifer. The aquifer is continuous below the entire Anchorage Bowl. The thickness generally increases from approximately 100 feet in the Chugach foothills to 1100 feet at a point between the Knik and Turnagain Arms. In the vicinity of the site, the aquifer is approximately 600 feet thick and is located approximately 100 to 300 feet below the ground surface.

1.6.8 Groundwater Occurrence

The depth to the top of the unconfined aquifer ranges from about 3 to 10 feet below the ground surface and the average saturated thickness is approximately 15 feet. The surface of the water table slopes southwest at the site and varies in elevation between approximately 65 and 74 feet above mean sea level. The water elevations measured during the RI field investigation were used to create water table contour maps. The two sets of contours are similarly shaped and show a difference in water table of 1 to 2 feet. The horizontal hydraulic gradient ranged from approximately 0.007 to 0.01 ft/ft.

1.6.9 Groundwater Supply

A survey of the water supply wells within 1/2 mile radius of the site revealed 9 potable water wells and 4 non-potable water wells. All of these wells draw from the lower confined aquifer with the potable wells ranging in depth from 76 feet below ground surface (bgs) to 850 feet bgs, and the non-potable wells ranging in depth from 152 feet bgs to 257 feet bgs. Only three of these wells, the Inlet Co. well, the Steel Fab well, and the Alaska Concrete Products well are located down gradient from the site. No groundwater wells completed in the unconfined aquifer were identified within a half-mile radius of the site.

2.0 SITE HISTORY AND ENFORCEMENT ACTIONS

The first documented use of the site occurred in October of 1950, when much of the site was leased by a construction company for maintenance and storage of heavy equipment and supplies. This operation continued on parts of the site until 1960.

Aerial photographs of the Ship Creek area are available for most years since 1939. Photographs prior to 1939 show little salvage material and debris and no buildings onsite. Aerial photographs show that considerable excavation occurred in the southern half of the site between 1950 and 1953. A haul road is visible up the bluff to the north leading to Elmendorf Air Force Base, and it is likely that gravel from the site was mined for use in base construction. Aerial photographs also show that these excavations had been backfilled by 1972 to establish the present site grade. Soil borings and test pits indicate that the fill material consisted mostly of sandy and silty soil. No material was encountered during subsurface investigations which indicates dumping of hazardous waste materials during fill operations.

Metal recycling and salvage businesses operated on the site beginning in 1955 and until 1993. From 1955 to 1986, metal recycling and salvaging occurred on the entire area within the present fence lines. Following EPA's initial response action in 1986, the scrap business was restricted to the small parcel northeast of the fenced area south of Railroad Avenue and west of Yakutat Street. During the period from 1955 to 1986, hundreds of thousands of tons of ferrous and nonferrous materials were handled at the site. At some

time after 1955 batteries were handled at the site to recover their lead and transformers were handled primarily to recover the copper in the core windings.

Transformer oil was drained by site operators. The oil was released onto the ground, or used as hydraulic fluid in onsite equipment. There is no information (such as manifests) which indicate that transformer oils were shipped off-site for proper disposal or treatment. Copper transformer cores were removed from the cases and placed in an onsite incinerator to remove shellac and paper insulation. The copper cores were then shipped offsite for salvage. Batteries were stockpiled onsite and may have been processed onsite prior to sale for their lead content. Processing of batteries may have included draining fluid from cases and breaking the cases to remove the lead plates. Drums containing wastes and chemicals were also stored onsite as part of the salvaging operations.

Aerial photographs from the 1960s through 1986 reveal salvage materials onsite. By 1975, the incinerator building, sales office trailer, and warehouse on the north end of the site had been constructed. The volume of salvage material and the number of buildings adjacent to the site continued to increase until 1985.

Although activities known to have resulted in hazardous substance releases were discontinued in April 1986, when an EPA Order was issued pursuant to 42 U.S.C. § 9606, site operations continued on the northeast corner of the site until April 1993. The site owners and site operator were requested to perform a removal action but declined to or were unable to conduct the work. The 1986 Order led to an EPA removal action and resulted in a portion of the site being fenced off and closed to public access. The removal action is described in more detail in Section 2.1 below. Figure 1-3 shows the location of former operations on the site and scrap-covered areas in existence when the removal action was begun by the EPA in 1986.

The site was proposed for listing on the National Priorities List (NPL) on July 14, 1989. The site was listed on the NPL on August 30, 1990. 55 Fed. Reg. 35502.

On December 6, 1991, the United States filed a lawsuit under Section 107 of CERCLA, 42 U.S.C. § 9607, against eight parties for recovery of EPA's costs incurred in performing the removal action and a determination of liability for future costs. The eight parties sued were the Alaska Railroad Corporation, Ben Lomand Inc., Chugach Electric Association, Inc., Westinghouse Electric Corporation, Sears, Roebuck and Co., Montgomery Ward and Co., Inc., J.C. Penny Company, Inc., and Bridgestone/Firestone, Inc. Certain other Federal entities are considered to be within the class of persons who may be liable under CERCLA. Those entities are the Federal Railroad Administration, Department of Transportation, Defense Reutilization and Marketing Service, Department of Defense, and the Army/Air Force Exchange Service.

On September 23, 1992, Chugach Electric Association entered into an Administrative Order on Consent to conduct a remedial investigation/feasibility study at the site. The RI commenced in October 1992 and ended in August 1994. The feasibility study was completed in January 1996. During the remedial investigation and feasibility study, treatability tests were performed for solidification and soil washing and a pilot scale soil washing unit was tested on-site. Supplemental soil sampling occurred during preparation of the feasibility study. During the EPA removal action, the RI/FS field work, and scrap/debris removal, wastes were containerized and placed within the fenced portion of the site. The current location of existing fence and the various containers and wastes are shown in Figure 1-4.

EPA issued a Unilateral Administrative Order on September 7, 1993 to the Alaska Railroad Corporation to remove armored personnel carriers sitting on a portion of the site to allow access to the site for completing the remedial investigation and feasibility study.

2.1 Scope and Role of Removal Action

During the period 1986 to 1988, the EPA Region X Superfund Removal and Investigations Section performed a removal action at the site under authority provided in Section 104 of CERCLA, 42 U.S.C. § 9604. The scope of the removal effort was directed towards removing the ongoing sources of releases or substantial threat of releases of hazardous substances from transformers, lead acid batteries and barrels and drums stored on the site. Additionally, soil and groundwater samples were collected. A rip-rap berm was constructed along the bank of Ship Creek on the southeast corner of the site to prevent erosion. Several areas of contaminated soils were excavated and placed in a mound on-site and sprayed with shotcrete (Figure 1-4). A more complete description of the removal action can be found in the On Scene Coordinators Report for the site.

The removal actions removed and treated the principle threats present at the site. These principle threats included more than one thousand gallons of PCB contaminated oils, eighty-two 55 gallon drums of RCRA hazardous waste, 10,450 gallons of waste oils, 185 PCB contaminated transformers and 781,000 pounds of lead acid batteries. The PCB oils were incinerated and the waste oil was recovered and the batteries were recycled.

Major Chronological Events of the Removal Action are as follows:

August 1985	Soil Samples collected by the Alaska Department of Environmental conservation (ADEC) identified PCB contamination in on-site surface soils as high as 110,000:
October 1985	EPA conducted a two week assessment documenting wide spread PCB and heavy metal contamination in soils, the presence of 175

	transformers, hundreds of drums and thousands of batteries. Chlorinated Dioxins and Furans were identified in ash associated with an on-site incinerator.
April 1986	EPA issued a CERCLA 106 Order against potentially responsible parties to begin stabilization and cleanup of the site. No parties came forward to implement the cleanup.
June-July 31 1986	Phase 1 of the response action commenced by EPA. Site security was undertaken, removal of 1000 gallons of PCB contaminated oils, removal of eighty-five 55 gallon drums of RCRA hazardous waste, installation of four groundwater monitoring wells, isolation of dioxin/furan wastes, construction of an erosion control wall along Ship Creek, fish bioassay of resident fish in Ship Creek, initial PCB soil sampling.
May 1987	EPA Emergency Response Team and EPA contractors conducted additional site assessment including installing seven temporary monitoring wells, shallow surface soil borings, off-site sampling along Ship Creek.
June 1987- October 1987	EPA conducted phase II of removal action. Approximately 781,000 pounds of batteries and 10,450 gallons of waste oils were recycled, 1600 cubic yards of PCB contaminated soils were stockpiled and sprayed with a temporary concrete fiber cap.
June 1988	EPA conducted final phase of removal action. These activities were primarily focused on securing the site until further remedial actions could be undertaken.

3.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

The Proposed Plan for the site was released to the public for comment on March 13, 1996. The plan identified EPA's recommendation for cleaning up lead and polychlorinated biphenyl contaminated soil at the Standard Steel and Metals Salvage Yard in Anchorage. The Proposed Plan was made available along with the RI/FS reports at the Information Repositories. The comment period lasted from March 18 to April 17, 1996. The selected remedy is based on the Administrative Record for this site. The Administrative Record is located in the EPA Region 10 office and in the site information repository located in the Bureau of Land Management Library in Anchorage, Alaska.

A public meeting was held on April 10 at the Fairview Community Recreation Center in Anchorage. On April 2 a reminder of the meeting was mailed. The meeting was attended by twenty-two people. EPA's project manager and Chugach Electric Association's project manager presented information about the site and the recommended cleanup alternative. Questions were answered and formal comment was taken. Four commentators presented oral comments at the meeting. Responses to the comments are included in the Responsiveness Summary to the ROD.

3.1 Summary of Community Relations Activities:

July 14, 1989 - Standard Steel proposed for inclusion on the NPL and 60-day comment period initiated.

July 22, 1992 - Community Relations Plan issued based on telephone interviews conducted throughout May of 1992.

October 2, 1992 - A fact sheet issued summarizing previous cleanup activities and upcoming investigations.

May 26, 1993 - A fact sheet announced an agreement signed by Chugach Electric Association to conduct investigations, and announced an informational meeting to be held on June 24.

June 24, 1993 - EPA attended meetings with local community groups to discuss the scope of the remedial investigation. EPA was interviewed by two local television stations.

November 24, 1993 - A fact sheet was published to update the public on activities at the site.

July 12, 1994 - A 30-day public comment period was announced on a proposed Consent Decree for past cost recovery between EPA and a number of federal and private parties.

March 16, 1995 - A fact sheet asked for input on cleanup alternatives being evaluated based on the completed RI/FS.

April 25, 1995 - EPA and the State of Alaska hosted an informational meeting regarding the remedial alternatives being evaluated.

June 23, 1995 - A fact sheet explained the need for delaying the Proposed Plan for cleanup and the need for additional studies to evaluate soil washing as a alternative for remediating the site.

April 10, 1996- A public meeting was held in Anchorage Alaska to present the Preferred Alternative to the community.

4.0 SUMMARY OF SITE CHARACTERISTICS

4.1 Nature and Extent of Contamination

The nature and extent of contamination has been evaluated using data presented in the OSC and the RI reports and supplemental soil sampling conducted during the feasibility study. These data show that, consistent with past site operations, the primary chemicals of concerns (COCs) are lead and polychlorinated biphenyls (PCBs).

For almost all samples where PCBs were detected, Aroclor 1260 was the only PCB congener which was found, so that the total PCB concentration is represented by Aroclor 1260.

4.2 Media of Concern

The media of concern utilized to evaluate the site are surface and subsurface soil, groundwater, surface water, sediment, and air. Contaminants were screened against Risk Screening Tables, Supplemental Guidance for Superfund Risk Assessments in Region 10, USEPA, October 30, 1992 (Table 6-1) (these values have been replaced in Region 10 by using the Region 3 risk tables), and local background values for inorganics. The tables utilize a residential exposure scenario, using standard default exposure (ingestion and inhalation) assumptions which would not result in a 1 in one million additional chance of developing cancer from exposure to a contaminant through ingestion or pose a non-carcinogenic risk as expressed by a Hazard Quotient (HQ) greater than 0.1 for contaminants in groundwater and 1xE-7 and 0.1 HQ in soils. Background values were derived from the Elmendorf Air Force Base Basewide Background Sampling Report, Volume 1. Contaminants which exceeded screening values were further evaluated in the Baseline Risk Assessment.

4.2.1 Surface and Subsurface Soil

Surface soil is defined as the ground surface to 12 inches depth. Subsurface soil is defined as below 12 inches depth. The following paragraphs discuss the COCs for surface and subsurface soil. Figures 5-1 through 5-3 depict surface and subsurface soil PCB and surface lead concentrations.

4.2.1.1 Lead

Lead was detected in 128 of 132 samples analyzed during the RI. The maximum concentration measured during the RI sampling was 4,300 mg/kg. The maximum lead concentration detected during EPA's removal actions investigations was 44,500 mg/kg. Supplemental sampling during the FS had detections up to 7,200 mg/kg in surface soil. The background soil concentration for lead is 13.3 mg/kg, as determined by studies

conducted during the Elmendorf Air Force Base remedial investigations. Lead concentrations greater than 500 mg/kg do not extend below the first two feet of soil.

During the FS numerous additional samples were collected to conduct treatability tests. These samples focused on acquiring representative soils representing low, average, and high lead contamination. Low concentrations were around 500 mg/kg, average concentrations were around 1700 mg/kg, and high concentrations were around 5200 mg/kg. The highest lead concentration detected 24,000 mg/kg.

4.2.1.2 Other Inorganics

Arsenic, beryllium, cadmium, chromium, copper and zinc were detected above screening values and/or background. Arsenic concentrations were below background values (13.1mg/kg) in all but two samples (27 mg/kg and 55 mg/kg). These samples were located in areas with greater than 1000 mg/kg lead. Beryllium concentrations exceeded the screening criteria but were all below background. Cadmium concentrations (maximum of 11.6 mg/kg) exceeded background values (3.01 mg/kg) but were below the screening criteria (100mg/kg). Chromium concentrations were all within background (48.4 mg/kg surface soils and 76.1 mg/kg in subsurface soils) and below the screening value of 137 mg/kg in all but three samples. These samples were all located in areas with greater than 1000 mg/kg lead. The maximum chromium concentration detected was 151 mg/kg. Copper was detected above background (20 mg/kg) and above the screening value of 2,900 mg/kg in only one sample. This sample had greater than 1,000 mg/kg lead. Zinc was detected (maximum 2,520 mg/kg) above area background (103 mg/kg) but below the screening value of 80,000,mg/kg.

4.2.1.3 PCBs

PCBs were detected in 89 of 132 soil samples analyzed during the RI. The maximum concentration measured during the RI/FS sampling was 380 mg/kg. Twenty nine of 212 samples had concentrations above 50 mg/kg. Stockpiled (Section 4.2.1.7) soils from the Removal Action had maximum PCB concentrations of up to 10,600 mg/kg. During sample collection for treatability testing samples were obtained from the stockpiled soils which had concentrations up to 3,500 mg/kg.

Subsurface PCB contamination extends to groundwater in three locations on site. These locations are depicted in Figure 5-2. Of approximately 120 subsurface soil samples collected (RI/FS and Removal Actions) 3 had concentrations greater than 50 mg/kg. Maximum concentrations of up to 519 mg/kg PCBs were detected in subsurface soils associated with the LNAPL. The LNAPL had PCB concentrations of 4,500 mg/kg.

During the FS numerous additional samples were collected to conduct treatability studies. These samples were focused on acquiring representative samples of low, average and high soil PCB contaminated soils. Low soils were around 50 mg/kg, average soils were around 150 mg/kg and high soils were around 700 mg/kg. The maximum high detected was 2700 mg/kg PCBs.

4.2.1.4 Dioxins and Furans

The concentrations of the dioxins and furans are expressed as 2,3,7,8-tetrachlorodibenzo-p-dioxin equivalent (2,3,7,8-TCDD equivalent). Dioxins and furans were detected at 9 of 10 surface sample locations. The maximum 2,3,7,8-TCDD equivalent concentration was 0.0017 mg/kg. All nine samples exceeded the screening value of .0000004 mg/kg.

4.2.1.5 Volatiles and Semivolatiles

Several volatile and semivolatile organic compounds were detected in the surface soils. These compounds include methylene chloride, trichlorofluoromethane, tetrachloroethane, bis(2-ethylhexyl)phthalate, butylbenzylphthalate, di-n-butylphthalate, di-n-octylphthalate, diethylphthalate, dimethylphthalate, 1,2,4-trichlorobenzene, 2-methylnaphthalene, acenaphthene, anthracene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene. These compounds were all eliminated as potential COCs in the screening process after comparison of the maximum concentrations with the chemical specific RBCs.

One or more carcinogenic Polycyclic Aromatic Hydrocarbons (cPAH) were detected at 8 of 11 surface sample locations, often at estimated concentrations less than the practical quantification limit. No cPAHs were detected at the 9 subsurface soil sample locations. The maximum concentration of total cPAHs was 25.4 mg/kg.

4.2.1.6 Presence of Light Non-Aqueous Phase Liquid (LNAPL)

The LNAPL present at monitoring wells 17 and 19 locations is not evaluated separately as a medium of concern. The LNAPL is a very viscous, tarry material that cannot be effectively separated from the soil. Consequently, the LNAPL is considered as the same media of concern as subsurface soil.

During each groundwater sampling event all wells were monitored for the presence of both light and dense NAPL phases. DNAPL was not detected in any well. LNAPL was detected in MW-17A and MW-19A. Selected wells were examined for the presence of LNAPL using an oil/water interface probe during four separate measuring events. A layer of LNAPL was detected in MW-17A (0.23 to 0.44 feet thick) and MW-19A (0.05 to 0.89 feet thick). An LNAPL sheen was detected in well MW-17 for three events and in MW-19 for the first event only. Temporary wells MW-25 through MW-29 did not contain LNAPL during any of the measuring events. These data indicate that the

LNAPL plume is confined to the central part of the site in the vicinity of MW-17A and MW-19A bounded by the temporary well locations 25, 26, 27, 28 and 29, where a free product layer was not detected. A sample of LNAPL was collected from MW-17A and analyzed for volatile and semivolatile organics, PCBs, and metals. The LNAPL analyte concentrations are compared with risk based screening values and MCLs for groundwater in the paragraph below. However, the risk based screening values and MCLs for groundwater are not applicable for product layer and are mentioned for comparative purposes only.

4.2.1.6.1 Concentration of PCBs in LNAPL

The MW-17A product sample was analyzed for seven congeners of PCBs. Only PCB 1260 was detected, at a concentration of 4500 mg/kg (the laboratory reports product results in mg/kg instead of mg/L).

4.2.1.6.2 Concentration of Lead in LNAPL

Lead was detected in the MW-17A product sample at a concentration of 4.3 mg/kg.

4.2.1.6.3 Concentration of Other Contaminants in LNAPL

Volatile organic compounds detected in the MW-17A product sample indicated concentrations of methylene chloride (9300 mg/kg), tetrachloroethane (3600 mg/kg), 1,3-dimethyl-cyclohexane (3.0 mg/kg), 1,2-dichlorobenzene (0.62 mg/kg), 1,4-dichlorobenzene (2.8 mg/kg), ethylbenzene (1.7 mg/kg), tetrachloroethane (5.6 mg/kg), toluene (0.34 mg/kg), 1,1,1-trichloroethane (0.049 mg/kg), trichlorofluoromethane (0.017 mg/kg) and total xylenes (7.2 mg/kg), and six unknown hydrocarbon compounds.

Semivolatile organic compounds detected in the product sample included 1,4-dichlorobenzene (13 mg/kg), 1,2,4-trichlorobenzene (1300 mg/kg), 2-methylnaphthalene (33 mg/kg), and bis(2-ethylhexyl)phthalate (20 mg/kg).

Other metals detected in the product sample which exceeded screening values for groundwater included aluminum (116 mg/kg), calcium (84.5 mg/kg), chromium (0.72 mg/kg), copper (4.8 mg/kg), iron (148 mg/kg), magnesium (47.3 mg/kg), manganese (3.4 mg/kg), potassium (15.6 mg/kg) and vanadium (0.69 mg/kg). Arsenic, beryllium, cadmium, mercury, silver and thallium were not detected, but the detection limits were above their respective screening values.

4.2.1.7 Shotcrete Covered Soils

Approximately 1,600 cubic yards of PCB contaminated soils are covered with Shotcrete along the eastern boundary of the site. These soils have the highest concentration of PCBs detected at the site, with a maximum concentration of 10,600 mg/kg. An

evaluation of frequency has not been conducted but the purpose of the stockpiling on-site was to address off-site hot spot areas which exceeded the OSC's off-site action level of 10 mg/kg. On-site soils which had high concentrations (not defined in OSC report but some were above 500 mg/kg PCB) of PCBs were excavated and placed in the are which was subsequently covered with shotcrete.

4.3 Groundwater

Three sets of groundwater data were obtained from twenty wells over approximately a one year period. Sampling was conducted at high and low groundwater events. Seven wells were installed as pairs to monitor for dense and light non-aqueous phase liquids. Because of sampling problems associated with high sediment levels in groundwater the first round groundwater data was not utilized for PCBs, metals and semivolatile organic compounds. Phase 1 and 2 data were used for evaluating volatile organic compounds. Volatile organic compounds were not measured during Phase 3. Phase 2 and 3 data were used for evaluating metals and semivolatile compounds, including PCBs.

4.3.1 Lead

Lead was detected at 3 of 9 down gradient groundwater monitoring locations in Round 2 at concentrations of 0.0016 to 0.0031 mg/L. Lead was not detected at any of 8 down gradient locations in Round 3.

Lead concentrations in Rounds 2 and 3 are low relative to the EPA promulgated action level of 0.015 mg/L, and relative to background at Elmendorf AFB (0.047 mg/L). Considering the low frequency of detection and the low concentrations detected relative to the guideline, lead was not retained as a COC for groundwater.

4.3.2 PCBs

PCBs were detected in none of 12 well locations during Round 2. During Round 3, PCBs were detected at 2 of 9 well locations ranging from 0.000023 mg/L to 0.000032 mg/L. The concentrations are about 20 times lower than the MCL (0.0005 mg/L). Considering the low frequency of detection and the low concentrations detected relative to the MCL, PCBs were not retained as a COC for groundwater.

4.3.3 Volatile Organic Compounds

Tetrachloroethane (PCE) was detected at 2 of 12 sample locations during Round 1, and 2 of 9 sample locations during Round 2. The MCL for PCE is 0.005 mg/L and the RBC was 0.002 mg/L. PCE was detected at 0.0075 mg/L (MW-21) and 0.0022 mg/L (MW-24) during Round 1 (January 1993). During Round 2 (April/May 1993), the concentrations at these well locations (non-detect at MW-21 and 0.0016 mg/L at MW-24) were below both the MCL and close to the RBC. The additional Round 2 detection

(0.0002 mg/L at well MW-23), was below both the MCL and the RBC. The 95% upper confidence limit concentration of PCE including Round 1 data (0.00176 mg/L) is less than the MCL and the RBC. PCE was not identified as a COC in soil in the RA. The maximum level of PCE measured in soil was 0.12 mg/kg. Based on the low levels of PCE in groundwater and no significant detections in soils, PCE is not retained as a COC for groundwater.

4.3.4 *Semivolatile Organic Compounds*

1,2,4-trichlorobenzene was detected at only two locations (MW-21 and MW-24). The measured levels were 0.0003 mg/L (MW-21) and 0.0007 mg/L (MW-24). These concentrations are below the state and federal MCLs (0.07 mg/L) and the RBC (0.02 mg/L). (1,2,4-trichlorobenzene was detected in MW-21 at 0.003 mg/L during Round 2, which is above the RBC. This concentration, however, was an estimated concentration below the practical quantification limit for that sample. 1,2,4-trichlorobenzene was detected at .024 mg/l at MW-21 during round 1, however this data was not utilized because of excessive sediment in the sample.) Consequently, 1,2,4-trichlorobenzene is not retained as a COC for groundwater.

4.3.5 Other Metals

Various metals in addition to lead were detected in groundwater samples from all twelve monitoring wells. As stated previously, Round 1 data will not be discussed here because high levels of sediments in those samples do not make them representative of groundwater conditions. Metals which exceeded screening values in Round 2 and/or Round 3 included arsenic (9 wells), cadmium (1 well), and manganese (1 well). Arsenic was the only metal that exceeded its screening value in up gradient monitoring well #23. The maximum reported detection for arsenic was 13.9 μg/L in well MW-18, which is below the MCL (50 μg/L). The only metal to exceed its MCL was cadmium, which exceeded the MCL of 5 μg/L in MW-13 (29.1 μg/L) and up gradient well MW-23 (16.9 μg/L). Concentration of arsenic in Anchorage groundwater production wells ranged from 2 to 10 μg/L. This indicates that the arsenic levels detected in the groundwater samples only slightly exceed area background for the lower aquifer.

The reported background level for cadmium is 0.1 μg/L. However, the detection frequency of cadmium was low. Cadmium was detected at 3 of 9 well locations within or down gradient of the fenced area. Cadmium was detected in 4 of 32 samples collected from these wells. Further, it was detected only in unfiltered groundwater samples. The levels of cadmium measured in unfiltered samples ranged from 2.4 to 29 μg/L. Finally, as noted above, it was also detected at the up gradient MW-23 well location at a concentration of 16.9 μg/L. These data suggest that the few detections of cadmium likely result from the cadmium associated with sediment in unfiltered samples. The data do not suggest elevated cadmium resulting from past site operations.

4.4 Surface Water

No surface water runoff was observed at the site during the course of the RI. The only surface water feature in the site vicinity is Ship Creek. The average flow rate in Ship Creek is approximately 90 million gallons per day.

4.5 Sediment

Ship Creek sediment quality was evaluated in the RI. Samples were analyzed for lead and PCBs. Washington State 1991 Marine Sediment Guidelines were utilized for screening sediments because no federal or Alaska criteria were as stringent or available at the time. The PCB screening value was .07 mg/kg dry weight and the lead value was 31.0 mg/kg. The RI data revealed no significant impacts to Ship Creek sediment immediately adjacent to the site and as far as 500 feet below the site from ongoing or current releases from the site. The scope of the RI did not include sampling further downstream because there were reported, non-site related, PCB spills into Ship Creek and sediments are periodically dredged from Ship Creek. These two activities would have made evaluating past site releases into Ship Creek impractical. Only two of 22 creek sediment samples contained lead (CS-261: 34 mg/kg and CSA6-3: 45 mg/kg) above the screening value; however, the CS-261 sediments were not found to be toxic to aquatic life as a result of using two toxicity tests and downstream benthic macro invertebrate samples indicated that the benthic communities appeared to be similar to upstream communities. Two of 22 creek sediment sampling locations (CS-268 and CSA6-3) contained PCBs above the detection limit. The measured concentration were 0.2 mg/kg and 0.078 mg/kg, which are above the screening value. Creek sampling locations are shown on Figure 5-4.

The detections of lead and PCBs may have resulted from transport of soil containing lead and PCBs from the site into the creek or from transport of sediments containing lead and PCBs from locations upstream from the site. Soil transport from the site could occur as surface water runoff (although surface water runoff from the site was not observed during the RI field investigations) or during flood events. The estimated area of submergence during a 100-year flood event is depicted on Figure 1-2. The soils present in the areas that would be submerged generally contain low levels of lead (maximum 350 mg/kg) and PCBs (maximum 12 mg/kg). The general lack of lead and PCB detections at significant concentrations in Ship Creek sediment samples, the lack of observed surface water runoff from the site, and the relatively low levels of lead and PCBs in soils that would be submerged during flooding suggest that impacts to the creek sediment from lead and PCBs originating from the site would not be significant. These soils are not creek sediments and as explained earlier, there is no direct surface water runoff pathway to transport them into Ship Creek.

The location of a wetland identified in the vicinity of the site is shown on Figure 1-2. No samples of the sediment in the wetland were collected during the RI; however, the

nearest soil samples, located between the fenced area of the site and the wetland, about 50 feet from the edge of the wetland, contained low levels of lead (74 to 110 mg/kg) and PCBs (<0.03 to 1.4 mg/kg).

4.6 Air

Air dispersion modeling was performed to estimate potential maximum off-site ambient air concentrations and deposition of PCBs and lead resulting from contaminant emissions from the site under current site conditions and during salvage operations (pre 1986). Modeling was conducted using the EPA-approved Industrial Source Complex- Long-term Dispersion Model (ISCLT2). Modeling conclusions were that air concentrations and subsequent deposition were insignificant.

Air is not retained as a medium of concern.

4.7 Summary

The highest and most consistent detections of the principle contaminants, lead and PCBs, was found in surface and subsurface soils. These levels were not as high as those initially detected during the Removal Action. However, the RI did not re-sample the soil stockpile and therefore higher concentrations than were reported in the RI are likely present in the stockpile.

5.0 SUMMARY OF SITE RISKS

CERCLA response actions at the site as described in this ROD are intended to protect human health and the environment from current and potential future exposure to hazardous substances found at the site.

To assess the risks posed by site contamination, a "Baseline Human Health and Ecological Risk Assessment," (Risk Assessment) was conducted by EPA. The Risk Assessment assumes that there is no further site cleanup.

The site was divided into three Areas of Concerns (AOC) (Figure 6-1). The AOC's were selected based on current site conditions and historical activities. AOC-1 comprises the north eastern portion of the site. This area was where transformers and other materials were handled frequently. AOC-1 is characterized by the highest concentrations of PCBs and lead. It is also the area where PCB contaminated soils were stockpiled and covered during the Removal Action. AOC-2 comprises the remaining portions of the site within the EPA erected fence and areas bordering the site along Ship Creek.. This area was used primarily as a storage area for the salvage operations prior to EPA's Removal Action. AOC-3 consists of areas outside the fence primarily on the north-west side of the site.

5.1 Human Health Risks

The site is currently a vacant lot. Past uses of the site and the surrounding property is industrial/commercial. Activities at the site are anticipated to stay industrial/commercial.

An assessment of the risks to human health involve a four-step process: identification of contaminants of potential concern (COPCs), an assessment of contaminant toxicity, an exposure assessment for the population at risk, and a quantitative characterization of the risk.

5.1.1 Contaminants of Potential Concern

An initial screening analysis was done to identify the chemicals of potential concern (COPCs). This screening involved two steps. In the first step, COPCs were selected based upon a very conservative estimate of potential health risk. Maximum concentrations of chemicals in media (*e.g.*, soil and groundwater) on the site were compared to conservative risk based concentrations (EPA Region 3 Risk Based Concentration Table) and background values for inorganics. The risk based concentrations were derived assuming residential exposures; acceptable cancer risk levels of $1x10^{-7}$ for soil and $1x10^{-6}$ for water; and acceptable HQs of 0.1 (Table 6-2). For lead, the risk based criteria selected were 500 mg/kg for soil (After completion of the Baseline Risk Assessment, EPA lowered the screening level for lead to 400 mg/kg in soils. This change does not affect the conclusions of the Risk Assessment at this site) and 15 ug/l for water. These values are recommended by Superfund guidance.

The second step in the selection of COPCs was a more refined screening which narrowed the list of COPCs by considering factors such as frequency of occurrence of each COC and detection limits.

The final list of COCs for soil and groundwater are: Arsenic, cadmium, copper, chromium, lead, dioxins/furans, PAH's, PCB's, tetrachloroethane, and 1,2,4-trichlorobenzene. The potential for these COCs to impact health was further evaluated using more realistic and site-specific exposure assumptions.

5.1.2 Risks Related to Compounds Other Than Lead

The methods used to assess exposure and toxicity and to characterize risk are different for lead than for other contaminants. Therefore, lead is discussed separately from the other contaminants in Section 5.4.

5.1.2.1 Toxicity Assessment

Toxicity information was provided in the Risk Assessment for the chemicals of potential concern (COPCs). Generally cancer risks are calculated using toxicity factors known as slope factors (SFs), while noncancer risks are assessed using reference doses (RfDs).

EPA developed SFs for estimating excess lifetime cancer risks associated with exposure to potential carcinogens. SFs are expressed in units of $(mg/kg\text{-}day)^{-1}$ and are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that intake level. The term "upper-bound" reflects the conservative estimate of the risks calculated from the SF. Use of this approach makes underestimates of the actual cancer risk highly unlikely. SFs are derived from the results of human epidemiological studies, or chronic animal bioassay data, to which mathematical interpolation from high to low doses, and from animal to human studies, have been applied.

EPA developed RfDs to indicate the potential for adverse health effects from exposure to chemicals exhibiting noncarcinogenic effects. RfDs, which are expressed in units of mg/kg-day, are estimates of lifetime daily exposure for humans, including sensitive subpopulations likely to be without risk of adverse effect. Estimated intakes of contaminants of concern from environmental media (*e.g.*, the amount of a contaminant of concern ingested from contaminated drinking water) can be compared to the RfD. RfDs are derived from human epidemiological studies or animal studies to which uncertainty factors have been applied.

The Risk Assessment relied on oral and inhalation SFs and RfDs. For the two chemicals for which dermal exposures were able to be estimated (PCBs and chlorinated dioxins/furans), SFs were derived from oral SFs by adjusting for oral absorption. Toxicity factors were obtained from the Integrated Risk Information System (IRIS) or, if no IRIS values were available, from the Health Effects Assessment Summary Table (HEAST).

5.1.2.2 Exposure Assessment

The exposure assessment characterizes the exposure scenarios, identifies potentially exposed populations and their exposure pathways and routes of exposure, and quantifies exposure in terms of chronic daily dose (mg/kg/day or milligrams of contaminant taken into the body per kilogram of body weight per day).

For current land use, exposures to long-term workers in AOC 3 were considered, AOC 1 and 2 are fenced off and are not currently used. For future land-use, on-site exposures to workers as well as potential future residents were added for evaluation. For residential exposures, the following pathways were considered: (1) exposure to soil contaminants through soil ingestion and dermal contact, and inhalation of soil

contaminants that have volatilized or have been resuspended on particles in the air; and (2) exposure to groundwater contaminants through ingestion of drinking water and inhalation of volatiles during showering. For industrial exposures, all of the same pathways were considered except inhalation during showering.

EPA Superfund guidance recommends that both reasonable maximum exposures (RMEs) and average exposures be calculated in site risk assessment. RME exposures are calculated using assumptions that result in higher than average exposures to ensure that the risk assessment results are protective of the reasonably maximally exposed individual. For this risk assessment, RME and average exposures were quantified by using EPA default exposure factors (*e.g.*, body weight, contact rate, exposure frequency and duration) with site-specific exposure point concentrations. Both RME and average (more typical) exposures were calculated for residents and workers.

To estimate exposure point concentrations (EPCs) for soil for ingestion and dermal exposures, the 95 percent upper confidence levels (UCLs) on the mean were calculated separately for soils in each AOC. Because the EPA removal data representing soils below the shotcrete cap were not quantitatively evaluated, the EPCs do not include the highest PCB concentrations observed in soils at the site. For drinking water, the maximum values of the COPCs in individual wells were used as the EPCs.

5.1.2.3 Risk Characterization

For carcinogens, risks are estimated as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to the specific carcinogen. Excess lifetime cancer risk is calculated by multiplying the SF (see toxicity assessment, Section 5.1.2.1) by the quantitative estimate of exposure, the "chronic daily intake." These risks are probabilities generally expressed in scientific notation (*e.g.*, $1x10^{-6}$). An excess lifetime cancer risk of $1x10^{-6}$ indicates that an individual has a one in one million (1:1,000,000) chance of developing cancer as a result of site-related exposure to a carcinogen under the specific exposure conditions assumed.

The potential for noncarcinogenic effects is evaluated by comparing an exposure level over a specified time period (lifetime) with a RfD (see toxicity assessment section above) derived for a similar exposure period. The ratio of exposure to toxicity is called a hazard quotient (HQ). Hazard quotients are calculated by dividing the exposure by the specific RfD. By adding the hazard quotients for all contaminants of concern that affect the same target organ (liver, nervous system, etc), the hazard index (HI) can be calculated.

The RME provides a conservative but reasonable exposure scenario for considering remedial actions at a Superfund site. Based on the RME, when the excess lifetime cancer risk estimates are below $1x10^{-6}$, or when the noncancer HI is less than 1, EPA generally considers the potential human health risks to be below levels of concern. Remedial action may be warranted when excess lifetime cancer risks exceed $1x10^{-4}$ (one

in ten thousand) and HIs exceed 1.0. Between $1x10^{-6}$ and $1x10^{-4}$, clean up may or may not be selected, depending on individual site conditions including human health and ecological concerns.

The following discussion summarizes the cancer and noncancer risk characterization results for the site.

5.1.2.4 Soil COC's

Cadmium, chromium, and copper were identified in the Risk Assessment (RA) as preliminary COCs for surface soils. None of these metals were identified in the RA as posing a carcinogenic risk above 10^{-6} or non-carcinogenic risk greater than a HQ of 1.0 . The RA determined that metals other than lead do not contribute significantly to risk. These metals were not retained as COCs for developing Remedial Action Objectives (RAOs); however, their potential contribution to cumulative systemic toxicity was utilized in evaluating overall risks for the site. RAOs are discussed in Section 6.

Polycyclic Aromatic Hydrocarbons; Each of the polycyclic aromatic hydrocarbons (PAHs) identified in the RA as a potential COC is a suspected carcinogen. The compounds are generally discussed as a group and referred to as carcinogenic PAHs (cPAHs). Neither total or individual cPAH risks exceeded the lower end of EPA's range (1xE-4) for any scenario or exposure pathway. Five of the cPAHs posed a risk greater than 1xE-6 for residential exposure via ingestion, and only two cPAHs posed greater than 1xE-6 risk for long-term worker industrial exposure via ingestion (Benzo(a)pyrene 3.2xE-6 risk and Chrysene 1.9xE-6 risk). The RA concluded that cPAHs are not a significant risk driver at the site and cPAHs were not retained as COCs for development of RAOs.

5.2 Combined Short- and Long-Term Worker Exposure Pathways

Both short- and long-term workers may be exposed to soil ingestion, dermal contact, and particulate inhalation pathways. Short-term workers are characterized as construction, or utility workers who would be exposed to the site for a limited amount of time. Short term workers have a higher ingestion rate (480 vs. 50 mg/day) but shorter exposure frequency (< 75 days/year vs. 250 days/year) and duration (1 year vs. 25 years) and averaging time for noncarcinogens (365 days vs. 9,125 days) than long-term workers.

5.2.1 Short-Term Worker

Combined RME short-term worker pathway excess cancer risks are 3E-5 in AOC-1, and combined AOC-1 hazard indices are 3.1. Risks are primarily contributed by PCBs. Cancer risks are within the 1E-4 to 1E-6 target risk range, while the hazard index exceeds the level of exposure unlikely to result in adverse health effects.

5.2.2 Long-Term Worker

Combined RME long-term excess cancer risks are 1E-3 in AOC-1 and combined AOC-1 hazard indices are 5.3. Combined RME long-term cancer risks are 1E-4 in AOC's 2 and 3, while combined hazard indices are 1.0 in AOC-3 and less than 1.0 in AOC-2. These risks are also primarily contributed by PCBs. PCB cancer risks exceed or are equivalent to the 1E-4 target risk range in all the AOCs. The hazard index in AOC-1 exceeds the level of exposure unlikely to result in adverse health effects.

5.3 Combined Residential Exposure Pathways

Combined RME excess cancer risks are 5E-3 in AOC-1, 6E-4 in AOC-2, and 9E-4 in AOC-3. Combined RME hazard indices exceed unity in all AOCs. PCB and 2,3,7,8-TCDD equivalent cancer risks exceed the 1E-4 to 1E-6 target risk range in all AOCs. Hazard indices for all AOCs exceed the level of exposure that is unlikely to result in adverse health effects. PCBs contribute the greatest to site risks, estimated at approximately 80%. Lead risks were not quantified but exceed EPA's soil screening values in all AOCs. Groundwater risks do not contribute significantly to total risks.

The RA reported that 2,3,7,8-TCDD equivalent presented a residential cancer risk exceeding 10^{-4}. Dioxins and furans are retained as soil COCs for development of RAOs, because of their potential to contribute to the cumulative excess cancer risk. However, residential use of the site is highly unlikely and the risk posed by dioxins/furans to long and short term workers is within the acceptable risk range.

Combined Short- and Long-term workers, and residential risks are summarized in Tables 6-3 and 6-4.

The groundwater pathways do not contribute significantly to risk if inorganic risks are not considered, due to high background concentrations. The inorganic risks were attributed to background contaminants. Lead risks are discussed below.

5.4 Risks Related to Lead Only

There is substantial scientific literature on the toxicological effects of lead in humans. Children appear to be the segment of the population at greatest risk from the toxic effects of lead. Health impacts from lead are primarily assessed by using levels of lead in blood. At blood lead levels of 40 to 100 micrograms per deciliter (ug/dL), children have exhibited nerve damage, permanent mental retardation, colic, anemia, brain damage, and death. Blood lead levels as low as 10ug/dL (or lower) have been associated with neurological and developmental defects in children. Blood lead levels of concern for adults are generally higher than for children. However, studies examining the relationship between lead exposure and blood pressure suggest that blood lead levels from as low as 7 ug/dL upward to approximately 30 or 40 ug/dL may increase blood

pressure. In addition, studies suggest that low levels of exposure for pregnant women may increase the risk for developmental effects in the unborn child.

For lead in soil, EPA's Office of Solid Waste and Emergency Response (OSWER) has issued Interim Soil Lead Guidance for CERCLA sites. In this guidance, a 400 mg/kg screening level for lead in soil under residential land use is recommended. This level was derived using the Integrated Exposure Uptake/Biokinetic (IEUBK) Model to estimate a soil concentration that will not result, under default residential exposure assumptions, in an unacceptable blood lead level in children. Exceeding this level does not necessarily indicate that a remedial action is necessary, but does indicate that a site-specific study of risks is warranted. Residential cleanup standards for CERCLA remedial actions can be developed using the IEUBK Model on a site-specific basis where site data support modification of model default parameters. EPA considers this model to be the most appropriate and widely applicable tool available for evaluating residential risks from lead.

Lead was not included in the quantitative risk estimates of the Risk Assessment because: (1) EPA-approved RfDs and Sfs are unavailable, and (2) EPA guidelines specify the use of the EPA Integrated Exposure Uptake/Biokinetic (IEUBK) model for estimating acceptable lead levels in soil for children in residential scenarios but there is no EPA accepted model for estimating lead exposure to adults in Industrial scenarios.

The IEUBK model estimates the blood lead concentrations expected to result from exposure to lead concentrations in soil and other media (e.g., air, water, diet, dust, and paint) for children. EPA recommends a benchmark of either 95 percent of the sensitive population of children having blood lead levels below 10ug/dL or a 95 percent probability of an individual child having a blood lead level below 10ug/dL. When the IEUBK model is run using this benchmark and all the model's default parameters, an acceptable soil screening level of about 400 mg/kg is predicted for lead. [Note: When the Risk Assessment was done for the site the IEUBK model in use by EPA predicted an acceptable soil screening level of about 500 mg/kg. The newer version of the model predicts a level around 400 mg/kg.]

The IEUBK model does not address lead exposure to older children or adults. Therefore, potential risks associated with exposures of adult residents and workers could not be quantitatively evaluated using the IEUBK model. However, the exposure potential and sensitivity of older receptors are generally lower than those of young children.

Health impacts for lead were characterized by comparing the exposure point concentrations calculated for lead in soil at the site, using the methods summarized above to 500 mg/kg (for residential exposures); and to 1,000 mg/kg (for industrial exposure). In both cases, risks associated with either residential or industrial exposures to the elevated concentrations of lead in site soil were determined to present significant

risks to human health. Therefore, a cleanup action to address the lead-contaminated soil at the site is warranted.

5.5 Ecological Risk Assessment

The objective of the ecological risk assessment was to evaluate potential harm to ecological receptors posed by chemicals in environmental media both on- and off-site. The scope of the assessment was limited to the two primary chemicals-of-concern, PCBs and lead. The assessment identifies several groups of potential ecological pathways and receptors:

- Vegetation potentially exposed through contact with soils
- Soil-dwelling invertebrates potentially exposed through contact with soil
- Small mammals potentially exposed through ingestion of soil and contaminated food
- Aquatic life potentially exposed through contact with sediments, or through ingestion of contaminated prey.

The ecological risk assessment concluded that the most sensitive ecological habitat in the site vicinity is found in Ship Creek. It further concluded that the data indicate that conditions within Ship Creek, within the study area, are not significantly impacted by contamination from the site.

The ecological risk assessment observed that the highest contaminant concentrations were measured in the area where former site operations were concentrated and that, because of the gravelly fill material and shotcrete cap, little ecological habitat is present in this area.

Based on the information presented in the ecological risk assessment, it appears that risk to ecological receptors are small, due to the poor habitat of the site. Concentrations of PCBs outside the existing fence and adjacent to Ship Creek pose a risk to ecological receptors.

5.6 Uncertainty in the Risk Assessment

The accuracy of the risk characterization depends in large part on the accuracy and representativeness of the sampling, exposure, and toxicological data. Most assumptions are intentionally conservative so the risk assessment will be more likely to overestimate the risk than to underestimate it. For instance, the Risk Assessment did not alter the exposure frequency to account for at least five months of frozen, or snow covered soils at the site.

Uncertainty in the toxicity evaluation may over-estimate risks by relying on slope factors that describe the upper confidence limit on cancer risk from carcinogens. Also, evidence

for carcinogenicity of the contaminants of potential concern are based on animal studies and limited human data. Some under-estimation of risk may occur, however, due to lack of quantitative toxicity information for some contaminants detected at the site, and because the PCB-contaminated soils below the shotcrete were not quantitatively evaluated. The soils stockpiled below the shotcrete had PCB detections up to 10,600 mg/kg.

5.7 Conclusion

The Baseline Risk Assessment supports the conclusion that hazardous substances are found on the site and that the actual or threatened release of these substances from this site, if a response action is not taken, may present an imminent and substantial endangerment to the public health, welfare, or the environment.

6.0 REMEDIAL ACTION OBJECTIVES AND CLEANUP STANDARDS

The overall objective of the remedial actions for the Standard Steel and Metals Salvage Yard Site is to provide an effective mechanism for protecting human health and the environment from contaminated site soils, while allowing future industrial use of the property. Remediating the site to industrial cleanup levels is appropriate because the existing land use is industrial/commercial and future land use plans of the municipality of Anchorage call for maintaining industrial/commercial zoning at the site and surrounding area. The following remedial action objectives for each contaminated media have been developed to describe what site remedial actions will need to be accomplished.

Groundwater is not retained as a medium of concern for development of RAOs; however, prevention of future migration of contaminants into groundwater will be addressed by the selected remedy.

Sediment is not retained as a contaminated medium for development of RAOs; however, prevention of future migration of contaminants into creek or wetland sediments will be addressed by the selected remedy.

Surface and subsurface soil (which includes the LNAPL soil) are retained as media of concern for development of RAOs. Table 5-1 shows the COCs for the soil medium. Groundwater, surface water, and sediments are not retained as contaminated media for development of RAOs; however, prevention of future migration of contaminants into groundwater, surface water, and sediments will be addressed by the selected remedy.

PCBs are the dominant quantified risk driver, estimated to contribute at least 80% of the risk at the site. While lead was not quantified, a comparison of the lead concentrations to other contaminants, besides PCBs, showed that lead represents the next most significant contaminant at the site. Based on the majority of risks being contributed by

lead and PCBs, and the fact that all other contaminants are co-located with PCBs and lead, these two compounds were selected as "limiting chemicals" for evaluating the site and remedial action objectives.

Remedial actions at the site are required for contaminated soils only. Groundwater, sediments, and surface water do not pose an unacceptable risk and therefore do not require remedial actions. These three media, as well as air, are media of concern because, without taking action on contaminated soils, these media would potentially pose an unacceptable risk in the future.

6.1 Remedial Action Objectives

The RAO's identified for the site are to:

- Prevent exposure by inhalation, ingestion, and dermal contact with contaminated soils that would result in an excess lifetime carcinogenic risk above 1E-4 for industrial use, and off-site non-industrial use;
- Prevent exposure by inhalation, ingestion, and dermal contact with contaminated soils that would result in noncarcinogenic health effects as indicated by an HI greater than 1.0;
- Prevent off-site migration of contaminants caused by mechanical transport, surface water runoff, flood events, and wind erosion;
- Prevent leaching or migration of soil contaminants into groundwater that would result in groundwater contamination in excess of regulatory standards.

These RAO's will protect surface water and sediment media of concern.

6.2 Cleanup Standards

Using the RAOs, cleanup standards were developed for each of the contaminants of concern. Cleanup technologies can be evaluated against these cleanup standards.

6.2.1 Soil Cleanup Standards

Based upon future industrial land use on the site, cleanup standards for the soil on-site are required for 2 contaminants: PCBs and lead. The estimated upper-bound cancer risks were unacceptable ($> 1x10^{-4}$) for PCBs. Lead levels were found on site which exceed the residential screening level (400 mg/kg) and which are above typical industrial cleanup levels. Two sets of cleanup standards will apply to the site. One set for the area of the site which will have engineering and/or institutional controls applied to it. In general, the controlled area will be inside the existing fence. Another set of cleanup standards for lead and PCBs will be for areas on the site that will have unrestricted access and which pose more ecological concerns. In general, those areas will be outside

of the existing fence. PCBs have been detected at levels which would pose a risk to ecological receptors beyond the fence line and pose an estimated 1E-4 risk to long-term workers in AOC 3.

There are no federal or Alaska regulatory cleanup standards for PCBs or lead in soil. The cleanup standards applied at the site soil are derived from two main sources:

- EPA guidance on soil cleanup levels (for PCBs and lead);
- Risk-based concentrations when guidance is not available.

6.2.1.1 PCB Cleanup Standards

For PCBs in soil, EPA established a nationwide spill cleanup policy under the Toxic Substance Control Act (TSCA), 15 U.S.C. § 2601 *et. seq.* The requirements specified under 40 CFR 761, Subpart G, particularly with respect to the clean up of PCB-contaminated soil, are considered a to-be-considered (TBC) guidance for purposes of CERCLA actions. The TSCA cleanup policy applies to spills containing PCBs at concentrations greater than 50 mg/kg. The cleanup standard for surface soils in restricted access areas is 25 mg/kg and for nonrestricted access areas is 10 mg/kg, with at least a 10 inch cover of clean (less than 1.0 mg/kg PCB) soil.

Less stringent cleanup standards may be approved by EPA on a site-specific basis, as defined in 40 CFR § 761.120(c), if factors associated with the spill "may mitigate expected exposures and risks or make clean up to these requirements impracticable." Alternatively, more stringent levels may be required by EPA based on site-specific factors (e.g., depth to groundwater or presence of drinking water wells) as outlined in 40 CFR § 761.120(b).

For CERCLA sites, EPA developed guidance which recommends action levels for contaminated soils in both residential and industrial land use scenarios. The action level for industrial sites is between 10-25 mg/kg PCBs in soils.

Based on the above guidances and site-specific conditions, EPA has selected 10 mg/kg PCB as the cleanup level for soil within the current fenced area (industrial use) and 1 mg/kg PCB for soils outside of the fenced area. The soil above these levels will have to be a part of the response action. Table 6-5 presents residual risks posed by the main risk drivers, excluding lead.

6.2.1.2 Lead Cleanup Standards

For Standard Steel and Metal Salvage Yard an industrial land-use scenario is considered most appropriate. Unfortunately, the IEUBK Model is applicable only to children, and no IEUBK model is currently approved by EPA for developing an adult industrial screening level for lead.

To mitigate health impacts from lead exposure, a 1000 mg/kg soil cleanup level was chosen as protective. This level is consistent with other Superfund lead cleanup levels at industrial sites and past EPA guidance (current EPA guidance suggests a 400 mg/kg screening level is protective for residential scenarios, no screening level is given for industrial scenarios).

Soil lead concentrations exceed 1000 mg/kg over much of the site in surface soils. The RI data show that all soils with greater than 1,000 mg/kg lead in surface soils were within the 10 mg/kg PCB surface soil contour.

Lead in excavated soil is a RCRA hazardous waste when the results of the Toxicity Characteristic Leaching Procedure (TCLP) exceeds 5 mg/kg. When a soil fails TCLP for lead it is known as a "characteristic" hazardous waste. Concentrations of 1,000 mg/kg for lead in site soils have failed TCLP, and therefore, are considered hazardous waste.

Considering the RCRA characteristic waste criteria, collocation of soils with greater than 10 mg/kg PCBs with 1000 mg/kg lead contaminated soils, EPA's lead cleanup guidance, and other lead cleanup levels at Superfund sites, the soil cleanup standard for lead at 1000 mg/kg was selected for the site. Soils exceeding 500 mg/kg outside the current fenced area will be consolidated into the remediation area. A 500 mg/kg cleanup level was selected instead of current guidance of 400 mg/kg lead screening level in soils because the surrounding land use is industrial, and will remain industrial in the future. These soils are not considered RCRA wastes. However, these soils could be transported to Ship Creek in the future by surface activities or surface water runoff and pose an unacceptable risk to biological receptors.

Therefore, excavating and treating soils with greater than 1000 mg/kg lead would occur to reduce the risks posed by lead in those soils and those soils would require treatment to comply with RCRA. Cleanup levels established for lead at other industrial sites in the region were considered in establishing the cleanup standard at the site.

6.3 Cleanup Standards Conclusions

Based on the information gathered and evaluated in the RI/FS, EPA concludes that contaminated soil on the site presents an unacceptable risk to human health, welfare, and the environment. All other contaminants of concern detected at the site above risk based levels were contained within soils with greater than 10 mg/kg PCBs and 1000 mg/kg lead. Therefore actions taken for PCBs and lead will address all remaining unacceptable risks at the site.

As stated above, the area within the existing fence line is considered the remediation area. This area, depending upon the alternative, will require an element of remediation (capping, treatment, or excavation) and institutional controls. The area outside of the existing fence line will not have engineered controls, thus, those areas will have a 1

mg/kg PCB and a 500 mg/kg lead cleanup level for protection of ecological receptors adjacent and within Ship Creek. All soils removed from outside of the existing fence line will be consolidated and disposed of within the existing fence boundary, outside of the flood plain.

Liquid PCBs, if present, are considered a principle threat at the site for PCBs. Principle threat lead soils are those which will always fail TCLP. TCLP tests run during the RI found a concentration of 3,000 mg/kg lead always exceeded 5 mg/L lead. The determination of principle threat lead soils is not a significant factor for evaluating remedial actions at the site, but all principle threat soils will be treated. All soils failing TCLP are a continuing source which could impact groundwater, and soils with greater than 500 mg/kg PCBs pose an estimated one to two orders of magnitude greater risk than the acceptable low end risk range, 1Ex-4 and are a potential source for impacting groundwater.

EPA evaluated the impacts of dioxins/furans in the Baseline Risk Assessment. The assessment determined that dioxins/furans do pose a risk. These soils are collocated with PCB soils having greater than 10 mg/kg PCBs. All actions taken to address PCBs will also address dioxins/furans.

Soil cleanup standards* for the site are:

Contaminant	Within Fence Line	Beyond Fence Line
PCBs	10 mg/kg	1 mg/kg
Lead	1,000 mg/kg	500 mg/kg

* EPA altered the subsurface cleanup level contained in the FS for PCBs from 50 mg/kg to 10 mg/kg to consolidate all soils which would pose an unacceptable risk if these soils were exposed in the future by site activities or erosion. This consolidation will ensure that all surface soils contain less than 10 mg/kg PCBs even after remedial actions are complete without monitoring soil concentrations or maintaining a clean soil layer (when applicable). The cost of this alteration is not considered significant because treatment of soils between 10 mg/kg and 50 mg/kg is not required and there is a reduction in monitoring and maintenance costs by consolidating contaminated soils.

7.0 DESCRIPTION OF ALTERNATIVES

General response actions and the process options chosen to represent the various technology types are combined to form alternatives for the site as a whole. Alternatives were developed to represent a range of potential remedial actions, including institutional controls, on-site containment, on-site treatment, and off-site treatment and disposal.

The alternatives include a no-action alternative (Alternative 1); an alternative using institutional controls with limited on-site remedial actions (Alternative 2); a capping

alternative (Alternative 3); two alternatives that combine containment of low threat soil with treatment of principal threat soil (Alternatives 4 and 5); three alternatives that incorporate on-site treatment of both low threat and principal threat soil (Alternatives 6, 7, and 8); and two alternatives that incorporate off-site treatment and disposal of both low threat and principal threat soil (Alternatives 9 and 10).

All alternatives considered except Alternative 1, include: (1) excavation and disposal within the existing fence line of contaminated soils from ecologically sensitive areas (flood plains and wetlands); and (2) treatment or disposal of materials stockpiled on-site from EPA removal actions, remaining scrap material that are deemed hazardous wastes under RCRA or as PCB wastes under TSCA, and investigation derived wastes.

An important element in considering each alternative is the residual risk to human health and the environment after completion of remedial actions. The risk equations and exposure parameters used in the residual risk calculations were the same as those used in the Baseline Risk Assessment except for Exposure Frequency. The exposure frequency was changed to 150 days/year to account for the presence of frozen ground for five months of the year at the site.

Estimates of volumes of soil to be excavated, treated, and disposed of were obtained in the following manner. In the feasibility study, volumes of soil are divided into two major categories: principal threat soils (i.e., soils with greater than 3,000 mg/kg lead and soils with greater than 500 mg/kg PCBs) and soils exceeding remedial action goals (i.e., soils with greater than 1,000 mg/kg lead and/or greater than 10 mg/kg PCBs, and subsurface soils with greater than 1,000 mg/kg lead and/or greater than 50 mg/kg PCBs).

After the FS was completed EPA decided that the subsurface soil PCB cleanup level was should be 10 mg/kg. This change will affect the volume estimates for subsurface excavation for the selected remedy. This alteration was deemed more protective of human health and the environment because it ensures future releases would not occur from vehicular traffic, freeze thaw process and erosion. Based on current site information this alteration should not result in a significant volume increase in excavated soils.

For each category of soil, a range of potential volumes was estimated. The minimum estimated volumes of soil are obtained using existing soil data with limited extrapolation into areas where sampling was not conducted. The maximum estimated volumes of soil are obtained using the existing soil data with extrapolation that involved estimating a potential maximum extent of contaminated area based on assessment of existing data.

Present worth cost of each of the alternatives was estimated using the procedures described in the EPA *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA 1988). Consistent with this guidance the cost for each alternative (where appropriate) consisted of an estimation of capital (based on volume

estimates, and contingencies) operation and maintenance, and present worth costs determined for 30 years at a 10 percent discount rate. Operation, maintenance and monitoring costs vary per alternative depending on action (soil cover vs geomembrane cap, removal of all soils vs removal of principle threat soils) and groundwater monitoring results after five year reviews) Ranges of costs are presented based on the sensitivity of the costs to the volume of soil requiring remediation and the unit costs of transportation, treatment, and disposal.

7.1 Individual Analysis of Alternatives

Detailed description of these elements is presented in the discussion of the selected remedy only. (See chapter 10)

7.1.1 Alternative 1 - No Action/Monitoring

Alternative Description

Alternative 1 includes these key components:

- Long-term groundwater and surface water monitoring

The existing fence would provide a margin of protection by restricting access; however, the fence would not provide long-term protection because it would not be maintained under this alternative, and a fence is not an engineering control to eliminate migration of contaminated soil by wind erosion, site activities, or a major flood event. The hazardous substances stockpiled on site would also remain and, over time, present a threat of future releases into the environment. Detoxification of the soil as a result of the natural degradation of the COCs over time is not expected to contribute significantly to long-term effectiveness as lead does not degrade and degradation of PCBs is slow. The half-lives of the more highly-chlorinated PCB congeners in soil environments are estimated to be 20 to 30 years, under controlled laboratory conditions.

7.1.1.1 Cost

Capital Cost	$ 0.0
30 Years Operations and Maintenance Cost	$ 264,000
Present Worth(1)	$ 264,000

(1) Discount rate (10%) is the average rate of return on private investment, before taxes and after inflation.

7.1.2 Alternative 2 - Limited Action

Alternative Description

Alternative 2 includes these key components:

- Removal of regulated material stockpiled on-site and disposal in a RCRA Subtitle C or D landfill
- Excavation and, consolidation within existing fenceline, of impacted and estimated 650 cubic yards (cy) soil from flood plain
- Installation and maintenance of a protective cover over upland areas
- Off-site disposal of 150 tons of scrap and debris by recycling or in a TSCA or RCRA Subtitle C or D landfill
- Maintenance of the existing fence to restrict access to the site
- Institutional controls to restrict land uses
- Long-term groundwater and surface water monitoring

Institutional controls would limit site use to industrial/commercial use and would prohibit use of the site for potentially high-exposure commercial use such as a day care facility. Land use restrictions combined with the fence would greatly reduce the potential for future exposure of children to lead in site soils. This alternative would require long-term maintenance of the existing shotcrete cover over the northern part of the site and establish health and safety procedures for future workers should soil excavation be conducted.

Other long-term management controls would include groundwater and surface water monitoring and installation and maintenance of a protective cover. The cover would consist of 12 inches of soil over the existing contaminated surface soils to prevent direct exposure to COCs. The protective cover would reduce long-term worker exposure (by about one order of magnitude based on EPA's PCB guidance) and would prevent erosion and migration of contaminated soil to surface water or wetlands. The alternative contains no provisions for treatment or containment of the LNAPL soil.

The relatively small volume of soil containing greater than 500 mg/kg lead or 1 mg/kg PCBs that is present in the flood plain would be consolidated within the fenced area and beneath the protective cover.

7.1.2.1 Cost

Capital Cost	$ 1,290,000
30 Years Operations and Maintenance Cost	$ 283,000
Present Worth(1)	$ 1,573,000

(1) Discount rate (10%) is the average rate of return on private investment, before taxes and after inflation.

7.1.3 Alternative 3 - Capping

Alternative Description

The key components of Alternative 3 include:

- Removal of regulated material stockpiled on-site and disposal in a RCRA Subtitle C or D landfill
- Off-site disposal of 150 tons of scrap debris by recycling or disposal in a TSCA or RCRA Subtitle C or D landfill
- Capping all soils exceeding the cleanup levels
- Consolidation, under the cap, of an estimate 1,800 cy of soil exceeding cleanup levels from areas outside the proposed capping area
- Installation and maintenance of a protective cover over remaining upland areas of the site
- Institutional controls to restrict land use

The cap would cover an area of about 19,000 square yards. The capped area is entirely outside of the limits of the 100-year floodplain. Soil from areas beyond the proposed capping area with lead or PCBs above cleanup levels would be excavated and consolidated beneath the cap, however, none of these soils would be a characteristic hazardous waste by TCLP-lead or would contain greater than 50 mg/kg PCBs. Soil stockpiled during the EPA removal action would also be capped.

The consolidation area would be compacted prior to cap placement. The consolidation area would be capped with a composite layer consisting of a 6-inch sand base layer, a minimum 60 mil thick synthetic liner, a 6-inch sand drainage layer, and a 12-inch soil top layer. Run-on water would be diverted away from the capped area. Based on groundwater modeling, this cap configuration would limit groundwater infiltration to less than 0.01 feet per year and decrease the potential for groundwater contamination. The LNAPL soil would be capped but not treated.

The cap would be designed to be resistant to freeze-thaw and burrowing animals. Since the low permeability layer of the cap consists of a synthetic liner and not clay, freeze-thaw resistance could be achieved by providing a base for the synthetic liner that is composed of non-frost susceptible material, such as sand. Resistance to burrowing animals could be achieved by incorporating a layer of cobbles or heavy-gauge wire mesh above the synthetic liner. The cap would also be designed to support vehicle traffic.

This alternative would require long-term maintenance and repair of the cap. Maintenance would include yearly inspections of the cap. The inspections would assess any damage to the synthetic liner or cover materials caused by surface water erosion, freeze-thaw action, or human or animal activities. The inspections would be conducted

after breakup, when any potential effects of erosion and freeze-thaw would be most visible.

A protective cover would be placed over upland areas that are not capped. The cover would consist of 12 inches of soil containing less than 1 mg/kg PCBs.

Protection of Ship Creek and wetland sediment and water quality would be achieved through installation of the cap, as the cap would effectively isolate impacted soil from surface water. Soil within the flood plain containing >500 mg/kg lead or >1 mg/kg PCBs would be excavated and consolidated on-site beneath the cap.

7.1.3.1 Cost

	Low	High
Capital Cost	$ 2,839,000	$ 2,862,000
30 Years Operations and Maintenance Cost	$ 283,000	$ 283,000
Present Worth[1]	$ 3,122,000	$ 3,145,000

(1) Discount rate (10%) is the average rate of return on private investment, before taxes and after inflation.

7.1.4 Alternative 4 - Containment with Treatment of Principal Threat Soils by Stabilization/Solidification

Alternative Description

The key components of Alternative 4 include:

- Removal of regulated material stockpiled on-site and disposal in a RCRA Subtitle C or D landfill, or recycling
- Off-site disposal of 150 tons of scrap debris by recycling or in a TSCA or RCRA Subtitle C or D Landfill
- Excavation and treatment by stabilization/solidification of an estimated 4,400 cy of soil containing lead and PCBs above principal threat concentrations
- Capping all remaining soils exceeding the cleanup levels
- Containment of the LNAPL soil within a 20,000 square foot slurry wall
- Excavation and consolidation beneath the cap of impacted soil from the flood plain
- Installation and maintenance of a protective cover over remaining upland areas of the site
- Institutional controls to restrict land use
- Groundwater monitoring meeting the requirements of 40 CFR § 271.75 (b)(6)

The combination of treatment of principal threat soils and containment of low threat soils is consistent with the NCP (40 CFR § 300.430(a)(iii)(A) through (C)).

The cap would be constructed in the same manner and would cover the same area for this alternative as for Alternative 3 (Capping). The area of the cap, the source areas that would be consolidated beneath the cap, the principal threat soil source areas, and the location of the slurry wall are depicted on Figure 8-1. The cap would have the same beneficial effects in preventing contact with impacted soil and minimizing surface water infiltration as discussed for Alternative 3. The area contained by the vertical barrier (discussed below) would be included within the capped area. Areas outside of the cap would be covered with 12 inches of soils containing less than 1 mg/kg PCB.

All principal threat soil (greater than 3000 mg/kg lead and 500 mg/kg PCBs) at the site would be treated to significantly reduce mobility of the contaminants using stabilization/solidification. The stabilization/solidification treatment is described in greater detail under Alternative 6. The treated soil would be placed on-site beneath the cap above the zone of groundwater fluctuation and below 1 foot depth. Some principal threat soil is present in the stockpiled soil from the EPA removal action. The principal threat soil would be treated and the remainder of the stockpiled soil would be consolidated beneath the cap. The stabilization/solidification treatment would result in a soil volume increase (estimated to be 15 to 30%) due to addition of stabilizing agents.

Further groundwater protection would be provided by containing the LNAPL soil area (the area beneath grids B4 through E5, Figure 8-1) within a low-permeability soil/bentonite slurry wall that is keyed five feet into the low-permeability Bootlegger Cove Formation. The LNAPL containment area is included within the capped area. The perimeter of the wall is approximately 800 feet and the area of wall (assuming the Bootlegger Cove Formation is an average of 25 feet from the soil surface) is 20,000 square feet. The wall would be formed by excavating a trench around the area to be contained. The trench would be filled with a bentonite slurry. The soil excavated from the trench, which is not expected to be significantly contaminated, would be mixed with bentonite, and the slurry mixture backfilled into the trench to form the cutoff wall.

Protection of Ship Creek and wetland sediment and water quality would be achieved through the treatment for mobility of the principle threat soils and installation of the cap, as the cap would effectively isolate impacted soil from surface water. Soil within the flood plain containing >500 mg/kg lead or >1 mg/kg PCBs would be excavated and consolidated on-site beneath the cap.

Institutional controls, including land use and access restrictions would be used. The deed and access restrictions would be the same as those described for Alternative 3. Groundwater monitoring would be conducted meeting the requirements of 40 CFR 271.75(b)(6).

7.1.4.1 Cost

	Low	High
Capital Cost	$ 4,367,000	$ 4,505,000
30 Years Operations and Maintenance Cost	$ 283,000	$ 283,000
Present Worth[1]	$ 4,650,000	$ 4,788,000

(1) Discount rate (10%) is the average rate of return on private investment, before taxes and after inflation.

7.1.5 Alternative 5 - Stabilization/Solidification with Treatment of PCB Principal Threat Soils by Thermal Desorption

Alternative Description

The key components of Alternative 5 include:

- Removal of regulated material stockpiled on-site and disposal in a RCRA Subtitle C or D landfill, or recycling
- Off-site disposal of 150 tons of scrap debris in an appropriate landfill (TSCA, RCRA Subtitle C or D)
- Treatment of an estimated 3,500 cy of soil exceeding the PCB principal threat level using thermal desorption
- Excavation and on-site stabilization/solidification of an estimated 12,600 cy of soils exceeding cleanup levels
- Disposal of treated soil on-site in a TSCA landfill
- Off-site disposal of thermal desorption process residuals, including lead-contaminated dusts (RCRA Subtitle C landfill) and desorbed PCBs (incineration)
- Excavation and consolidation within the existing fenceline of impacted soil from the flood plain
- Installation and maintenance of a protective cover over upland areas of the site
- Institutional controls to restrict land use
- Long-term maintenance of a fence to restrict access to the containment area

Soil above cleanup levels would be excavated and pre-processed. Soil containing greater than 500 mg/kg PCBs would be segregated for treatment using thermal desorption. Soil containing less than 500 mg/kg but greater than 50 mg/kg PCBs and greater than 1,000 mg/kg lead would be stabilized. Soil containing less than 1,000 mg/kg lead and 50 mg/kg PCBs would be disposed of on-site at a depth of greater than one foot but above the zone of groundwater fluctuation. The zone of groundwater fluctuation would be backfilled with clean fill. The locations and approximate depths of the soil that would be treated are depicted on Figure 8-2. After pre-processing, the volume of soil to be

treated by thermal desorption would be approximately 2,400 to 2,900 cubic yards, and the volume treated by stabilization/solidification would be approximately 7,700 to 12,600 cubic yards. Detailed descriptions of the stabilization/solidification and thermal desorption treatments are presented under Alternatives 6 and 8, respectively.

The LNAPL soil would be excavated, solidified and disposed of on-site or, if PCB concentrations are greater than 500 mg/kg, treated by thermal desorption.

A protective cover consisting of 12 inches of soil containing less than 1 mg/kg PCBs would be placed over upland areas of the site to minimize erosion and potential for migration of contaminants to surface water or wetlands. Soil within the flood plain containing >500 mg/kg lead or >1 mg/kg PCBs would be excavated and consolidated on-site beneath the cover. Long-term groundwater monitoring would be conducted to assess the effectiveness of the treatment for protecting groundwater.

7.1.5.1 Cost

	Low	High
Capital Cost	$ 7,346,000	$ 8,866,000
30 Years Operations and Maintenance Cost	$ 283,000	$ 283,000
Present Worth[1]	$ 7,629,000	$ 9,149,000

(1) Discount rate (10%) is the average rate of return on private investment, before taxes and after inflation.

7.1.6 Alternative 6 - Stabilization/Solidification

Alternative Description

The key components of Alternative 6 include:

- Removal of regulated material stockpiled on-site and disposal in a RCRA Subtitle C or D landfill
- Disposal of 150 tons of scrap debris by recycling or disposal in a TSCA or RCRA subtitle C or D landfill

Excavation of an estimated 12,600 cy of soil with subsequent treatment by stabilization/solidification of soils

- Disposal of an estimated 18,300 cy of stabilized/solidified soil on-site in a TSCA landfill
- Excavation and consolidation within the existing fenceline of impacted soil from the flood plain
- Installation and maintenance of a protective cover over upland areas of the site

- Institutional controls to restrict land use
- Long-term Operation, Maintenance, and Monitoring of the stabilized/solidified soils and the protective cover (if no re-use of solidified soils)
- Groundwater monitoring that meets the requirements of 40 CFR § 761.75(b)(6)

Soil above cleanup levels would be excavated and pre-processed to remove debris and oversized rocks. Soil containing between 10 mg/kg and 50 mg/kg PCBs would be backfilled on-site at a depth of greater than one foot but above the zone of groundwater fluctuation in the on-site TSCA landfill. The zone of groundwater fluctuation would be backfilled with clean fill. The locations and approximate depths of the soil that would be treated are depicted on Figure 8-3. The excavated, pre-processed soil would be added to a pug mill where it would be mixed with the stabilizing additives and placed in the landfill. After pre-processing the total volume of soil to be treated would be approximately 7,700 to 12,600 cubic yards. A mixture of 16% cement and 8% fly ash, which was determined to be the most effective combination during the treatability study, is the suggested stabilizing agent combination. The LNAPL soil may be included with the soil that is stabilized/solidified.

The exact mixing ratios and long-term durability would be evaluated by further testing during remedial design, including freeze-thaw and wet-dry testing. If inadequate durability is obtained, engineering controls (for example, changing the agent:soil ratio, increasing the burial depth, or providing a low-permeability liner above or below the treated soil) would be implemented. Based on treatability study results, a soil volume increase of about 15 to 30% is anticipated after stabilization.

Stabilization/solidification is anticipated to be a very effective treatment for protecting groundwater because of two factors: (1) stabilization/solidification of the lead and PCBs results in lower potential leaching of COCs to groundwater from the stabilized mass and (2) the low permeability of the stabilized material results in very slow rates of infiltration to the aquifer. Leaching tests (TCLP) conducted during treatability studies indicate that the concentrations of lead and PCBs in leach water would be less than MCLs. The TCLP test uses an acidic solution to simulate leaching, which generally results in more leaching of COCs than would occur under natural conditions at the site. Permeability tests indicate very low hydraulic conductivities of the stabilized soil, ranging from 7×10^{-7} to 8×10^{-8} centimeters per second (cm/sec). By comparison, the average hydraulic conductivity of site soils estimated from grain-size distribution relationships was 5×10^{-3} cm/sec (Woodward-Clyde 1994a), and the hydraulic conductivity in the site vicinity was estimated by the USGS to be about 3×10^{-2} cm/sec (USGS 1988). The TSCA chemical waste landfill liner hydraulic conductivity requirement is 10^{-7} cm/sec which indicates that the solidified material itself will meet the requirements of a landfill liner.

A potentially important factor in evaluating stabilization/solidification is the effect of the presence of the solidified mass on future land use. The solidified soil would not be placed within the 100-year flood plain and would be placed at least one foot above the maximum groundwater table elevation. Clean soil (less than 1 mg/kg PCBs) from on-site sources would be used to replace soil excavated from the groundwater table zone. A gravel course would be placed over the treated soils to provide a wearing surface and minimize erosion. The ground surface elevations will increase due to the volume increase from the treatment and the addition of the cover layer. The solidified mass would be configured to accommodate future site development. The solidified mass will provide excellent foundation support for structures and excellent stability during seismic events. Excavation of the solidified soil, however, could not be conducted by conventional methods. Disposal of solidified material would be in accordance with TSCA disposal and landfill requirements, 40 CFR §§ 761.60 and 761.75. Justification for waiving select technical requirements of 40 CFR § 761.75 have been justified in the feasibility study, and are discussed in more detail in section 9.2.

A protective cover consisting of 12 inches of soil would be placed over upland areas of the site to minimize erosion and migration of contaminants to surface water or wetlands. Soil within the flood plain containing >500 mg/kg lead or >1 mg/kg PCBs would be excavated and consolidated on-site. Groundwater monitoring in compliance with 40 CFR § 761.75(b)(6) would be conducted to assess the effectiveness of the remedy for protecting groundwater.

Institutional controls to limit land uses and restrict access would be used. At a minimum, land use restrictions must be recorded on the title of the property to keep activities limited to commercial/industrial uses and restrict high exposure uses of children, such as day care facilities. Unless the solidified soils are designed and used as a building foundation, a fence or other access barrier may be required to limit unrestricted access onto the landfill.

Long-term monitoring and, if needed, maintenance of the landfill will be required.

7.1.6.1 Cost

	Low	High
Capital Cost	$ 4,434,000	$ 5,396,000
30 Years Operations and Maintenance Cost	$ 283,000	$ 283,000
Present Worth[(1)]	$ 4,717,000	$ 5,679,000

(1) Discount rate (10%) is the average rate of return on private investment, before taxes and after inflation.

7.1.7 Alternative 7 - Soil Washing

Alternative Description

The key components of this remedial alternative include:

- Removal of regulated materials stockpiled on-site and disposal in a RCRA Subtitle C or D landfill
- Off-site disposal of 150 tons of scrap debris by recycling or disposal in a TSCA or RCRA Subtitle C or D landfill
- Excavation of 17,700 cy of soil and treatment by enhanced soil washing of an estimated 12,600 cy (after screening) of soil exceeding cleanup levels
- Backfilling of an estimated 16,200 cy of screened and washed soil on-site
- Stabilization (if necessary) of soil containing elevated levels of lead prior to on site disposal
- Dewatering and stabilization of contaminated fines and disposal in an off-site TSCA landfill
- On-site treatment of process water and disposal in a POTW
- Excavation and consolidation within the existing fenceline of impacted soil from the flood plain
- Installation and maintenance of a protective cover over upland areas of the site
- Institutional controls to restrict land use
- Groundwater monitoring in compliance with 40 CFR § 761.75(b)(6)

Soil above cleanup levels would be excavated. Surface soils containing less than 1,000 mg/kg lead and 50 mg/kg PCBs but above cleanup levels would be backfilled on-site at a depth of greater than one foot but above the zone of groundwater fluctuation. Soil containing greater than 1,000 mg/kg lead or 50 mg/kg PCBs would be treated by soil washing. The LNAPL soil would be excavated and treated.

The excavated soil would be screened to remove oversize material including large gravel and scrap material. The soil aggregates would then be broken down and the soil separated into fine (fine sand and smaller particle sizes) and coarse fractions using a trommel. The fine fraction is estimated to be 12% to 20% of the total volume washed, based on particle-size analyses. The fine fraction (particles smaller than 0.15 mm diameter) would be dewatered, stabilized to pass TCLP-lead criteria, and disposed of in an off-site TSCA landfill. The fine fraction is estimated to be 25% solids prior to dewatering and 50% solids after dewatering. The fines would be disposed of off-site in a TSCA landfill. The coarse fraction would be treated in one or two steps. Particulate lead may be removed using a specific gravity separation technique, such as jigging. The soil would then be washed using surfactant-enhanced water. Approximately 7,700 to 12,600 cubic yards of soil would be washed in this manner.

Process water and water removed from the sludge fraction would be treated on-site as needed and discharged to the POTW. Five thousand gallons of process water was generated during the pilot tests. A full scale soil washing system must be more effective at minimizing process water generation. Lead concentrations in the process water were as high as 32 mg/L (sample SS-WWH4). The POTW discharge standard for lead is 5.0 mg/L; there is no standard for PCBs. Process water would be treated to reduce inorganic chemicals, organic chemicals and surfactants, and pH neutralization. Water treatment may include one or more of the following processes: oil\water separation, Electrofloc®, precipitation, ultraviolet oxidation, neutralization, and carbon adsorption.

The treated coarse fraction would be disposed on-site. Treated soil that contains greater than greater than 1,000 mg/kg lead or 10 mg/kg PCBs would not be replaced within the top foot or within the zone of groundwater fluctuation. Disposal of soils with greater than 50 mg/kg PCBs would invoke TSCA disposal and landfill requirements, 40 CFR §§ 761.60 and 761.75. Waivers of parts of 40 CFR § 761.75 would be required, however justification for waiving bottom liners and leachate collection systems can not be justified.

A protective cover consisting of 12 inches of soil would be placed over upland areas of the site to minimize erosion and migration of contaminants to surface water or wetlands. Soil within the flood plain containing >500 mg/kg lead or >1 mg/kg PCBs would be excavated and consolidated on-site beneath the cover.

Deed and access restrictions would be used as described under Alternative 6. Periodic groundwater monitoring would be conducted after remediation is completed.

7.1.7.1 Cost

	Low	High
Capital Cost	$ 6,563,000	$ 8,881,000
30 Years Operations and Maintenance Cost	$ 234,000	$ 234,000
Present Worth(1)	$ 6,797,000	$ 9,115,000

(1) Discount rate (10%) is the average rate of return on private investment, before taxes and after inflation.

Because of the relatively high unit cost of treatment, the estimated cost for this alternative is sensitive to the volume of soil requiring treatment. In addition, the volume of fines generated requiring treatment, transportation, and disposal has significant cost implications, again due to the relatively high unit disposal cost for this soil fraction. This is particularly true if incineration of fines is required. The cost estimate assumes no soil or fines will require incineration. The volume and ultimate treatment requirements for the process water may have significant impact on the final cost for this alternative. Cost

estimates assumes local treatment of process water will be employed, and that incineration will not be required. Finally, cost estimates assumed stabilization of treated soils to obtain a TCLP-lead level of <5 mg/L will not be required. If this supplemental treatment process is necessary, an additional cost of approximately $300,000 - $425,000 can be expected. The Operation and Maintenance cost reduce groundwater monitoring after the first 10 years.

7.1.8 Alternative 8 - Thermal Desorption

Alternative Description

The key components of this remedial alternative include:

- Removal of regulated materials stockpiled on-site and disposal in a RCRA Subtitle C or D landfill
- Off-site disposal of 150 tons of scrap debris by recycling or disposal in a TSCA or RCRA Subtitle C or D landfill
- Excavation of an estimated 17,700 cy of soils exceeding cleanup levels and treatment of 12,000 cy of soils by thermal desorption
- Backfilling treated soil on-site
- Stabilization of 5,000 cy of soil and dusts containing elevated lead prior to on-site disposal
- Disposal of process residuals, including lead-contaminated dusts (off-site landfill) and desorbed PCBs (off-site incineration)
- Excavation and consolidation within the existing fenceline of impacted soil from the flood plain
- Installation and maintenance of a protective cover over upland areas of the site
- Institutional controls to restrict land use

Soil above cleanup levels would be excavated and pre-processed. Surface soil containing less than 1,000 mg/kg lead and 50 mg/kg PCBs but above surface soil cleanup levels would be backfilled on-site at a depth of greater than one foot but above the zone of groundwater fluctuation. Soil containing greater than 50 mg/kg PCBs would be treated by low-temperature thermal desorption. Soil containing greater than 1,000 mg/kg lead would be treated by stabilization. The estimated volume of soil that would be treated by thermal desorption following pre-processing is 7,200 to 12,000 cubic yards. The estimated volume of soil that would be treated by stabilization following pre-processing is 3,300 to 5,000 cubic yards. The LNAPL soil would be excavated and treated.

The excavated, pre-processed soil would be treated using thermal desorption. The vacuum-enhanced desorption process is incorporated in the alternative as a potential process option. The soil would be fed into a batch processing unit where the temperature is raised to volatilize PCBs. A negative pressure (vacuum up to 28 inches

Hg) would be maintained within the processing unit to control air emissions and to allow PCBs to volatilize at a lower temperature (300 to 400°F) than at atmospheric pressure (1,100 to 1,300°F). The volatilized PCBs would be condensed and concentrated in an oil phase. The captured PCBs would be drummed and transported off-site to a TSCA incinerator. Lead-contaminated dusts collected in the air emissions system would be stabilized and land filled off-site. The quantity of dust that would be generated is estimated to be 750 to 1,000 tons.

The vacuum-enhanced process option is currently undemonstrated and not TSCA-permitted for PCBs. The vacuum-enhanced process may be unavailable when remedial activities begin at the site. The high-temperature process option is demonstrated for PCBs; however, it would be much more expensive to mobilize to Alaska.

Further studies would be required during remedial design to demonstrate effectiveness and to determine the most appropriate treatment operating parameters for site soils. In addition, further studies should probably be conducted to evaluate materials-handling aspects, such as rewetting of the soil after treatment.

The treated soil would be disposed of on-site. Treated soils with lead concentrations exceeding 1,000 mg/kg would be stabilized prior to disposal on-site. The thermally desorbed soil would require rewetting before it can be stabilized. The water volatilized during the desorption process may be used to rewet the soil if it is free of lead and PCBs. Treated soil that contains greater than 1,000 mg/kg lead or greater than 10 mg/kg PCBs would not be replaced within the top foot of soil.

A protective cover consisting of 12 inches of soil would be placed over upland areas of the site to minimize erosion and migration of contaminants to surface water or wetlands. Soil within the flood plain containing >500 mg/kg lead or >1 mg/kg PCBs would be excavated and consolidated on-site beneath the cover.

Deed restrictions would be used as described under Alternative 6. Periodic groundwater monitoring in compliance with 40 CFR § 761.75(b)(6) would be conducted after remediation is completed.

7.1.8.1 Cost

	Low	High
Capital Cost	$ 9,316,000	$ 12,709,000
30 Years Operations and Maintenance Cost	$ 234,000	$ 234,000
Present Worth(1)	$ 9,550,000	$ 12,313,000

(1) Discount rate (10%) is the average rate of return on private investment, before taxes and after inflation.

The estimated present worth cost for Alternative 8 ranges from $9,550,000 to $12,313,000. Because of the relatively high unit cost of treatment, the estimated cost for this alternative is sensitive to the volume of soil requiring treatment. The unit cost for processing and cost for mobilization used in the cost estimate assumed that the vacuum-enhanced thermal desorption process option, which is currently unproven, will not be available when remediation of the site is conducted. The high-temperature thermal desorption process option costs were used in the estimate.

7.1.9 Alternative 9 - Off-site Disposal

Alternative Description

The key components of this remedial alternative include:

- Removal of regulated material stockpiled on-site and disposal in a RCRA Subtitle C or D landfill
- Disposal of 150 tons of scrap debris by recycling or disposal in a TSCA or RCRA Subtitle C or D landfill
- Excavation of an estimated 17,700 cy of soils exceeding cleanup levels and disposal of an estimated 12,600 cy of soils in an off-site TSCA/RCRA landfill
- Backfilling of excavations with imported clean soil
- Excavation and consolidation within the existing fenceline of impacted soil from the flood plain
- Installation and maintenance of a protective cover over upland areas of the site
- Institutional controls to restrict land use

Soil above cleanup levels would be excavated. Soils containing greater than 1,000 mg/kg lead would be disposed of in a solid waste landfill, except that any soils above 5 mg/L TCLP-lead will require stabilization prior to disposal. Surface soil containing less than 1,000 mg/kg lead and 50 mg/kg PCBs but above cleanup levels would be backfilled on-site at a depth greater than one foot but above the zone of groundwater fluctuation. The excavations would be backfilled with imported clean fill material. Soil containing greater than 50 mg/kg PCBs would be disposed of in an off-site TSCA landfill. The LNAPL soil would be excavated and disposed of off-site.

Prior to disposal, all debris and material larger than two inches would be screened out. The estimated volume of material to be disposed is 7,700 to 12,600 cubic yards. The remaining material would be loaded on rail gondola cars to be transported to a permitted landfill in the lower 48 states for disposal. All soils would be stabilized for lead prior to landfilling.

A protective cover consisting of 12 inches of soil, containing less than 1 mg/kg PCBs, would be placed over upland areas of the site to minimize erosion and migration of contaminants to surface water or wetlands. Soil within the flood plain containing >500 mg/kg lead or >1 mg/kg PCBs would be excavated and consolidated on-site beneath the cover.

Institution controls would be used to prevent exposure to contaminated soils.

7.1.9.1 Cost

	Low	High
Capital Cost	$ 8,246,000	$ 12,168,000
30 Years Operations and Maintenance Cost	$ 139,000	$ 139,000
Present Worth[1]	$ 8,385,000	$ 12,307,000

(1) Discount rate (10%) is the average rate of return on private investment, before taxes and after inflation.

7.1.10 Alternative 10 - Off-site Incineration

Alternative Description

The key components of this remedial alternative include:

- Removal of regulated material stockpiled on-site and disposal in a RCRA Subtitle C or D landfill
- Off-site disposal of 150 tons of scrap debris by recycling or disposal in a TSCA or RCRA Subtitle C or D landfill
- Excavation of an estimated 17,700 cy of soils exceeding cleanup levels, treatment of an estimated 12,600 cy of soils at an off-site TSCA incinerator, and stabilization of incinerator ash for lead
- Backfilling excavations with clean imported soil
- Excavation and consolidation within the existing fenceline of impacted soil from the flood plain
- Installation and maintenance of a protective cover over upland areas of the site
- Institutional controls to restrict land use

Soil above cleanup levels would be excavated. Surface soil containing less than 1,000 mg/kg lead and 50 mg/kg PCBs but above cleanup levels would be backfilled on-site at a depth greater than one foot but above the zone of groundwater fluctuation. The excavations would be backfilled with imported clean fill material. Soil containing greater than 1,000 mg/kg lead or 50 mg/kg PCBs would be transported off-site and treated at a

TSCA incinerator. The LNAPL soil would be excavated and treated off-site. Lead-contaminated incinerator ash would be stabilized.

Prior to disposal, all debris and material larger than two inches would be screened out. The volume of material to be treated/disposed is estimated to range from 7,700 to 12,600 cubic yards. The remaining material would be loaded on rail gondola cars to be transported to a TSCA incinerator in the lower 48 states for disposal.

A protective cover consisting of 12 inches of soil, containing less than 1 mg/kg PCBs, would be placed over upland areas of the site to minimize erosion and migration of contaminants to surface water or wetlands. Soil within the flood plain containing >500 mg/kg lead or >1 mg/kg PCBs would be excavated and consolidated on-site beneath the soil cover.

Institutional controls would be used to restrict land use.

The estimated present worth cost for Alternative 10 ranges from $21,880,000 to $34,318,000. Because of the very high unit costs of transportation and disposal, the estimated cost for this alternative is very sensitive to the volume of soil requiring treatment.

7.1.10.1 Cost

	Low	High
Capital Cost	$ 21,741,000	$ 34,179,000
30 Years Operations and Maintenance Cost	$ 139,000	$ 139,000
Present Worth(1)	$ 21,880,000	$ 34,318,000

(1) Discount rate (10%) is the average rate of return on private investment, before taxes and after inflation.

7.2 Groundwater Component

The remedial investigation determined that groundwater is not a media of concern requiring treatment. Although there is a LNAPL present in the center of the site, no dissolved contaminants were identified at the boundary of the site. The physical properties of the LNAPL are conducive to excavation with contaminated soils. The LNAPL will be remediated by the same treatment as the soils, unless it is determined during remedial design testing that the LNAPL requires off-site disposal because it is considered a liquid as determined by Method 9095 (Paint Filter Liquids Test) contained in 40 CFR § 268.32(i).

7.3 Applicable or Relevant and Appropriate Requirements

Remedial actions implemented under CERCLA must meet legally applicable or relevant and appropriate requirements (ARARs). ARARs include promulgated environmental requirements, criteria, standards, and other limitations. Other factors to be considered (TBCs) in remedy selection may include nonpromulgated standards, criteria, advisories, and guidance, but are not evaluated pursuant to the formal process required for ARARs. ARARs of federal or state governments must be complied with during CERCLA response actions. Local ordinances with promulgated criteria or standards are not considered ARARs, but may represent TBCs. Major chemical-specific, location-specific, and action-specific ARARs and TBCs for the remedial alternatives are presented below.

7.3.1 Chemical-Specific ARARs

Clean Water Act, 33 U.S.C. § 1314, establishes water quality criteria for freshwater surface waters for lead and PCBs.

Clean Water Act, 33 U.S.C. § 1313 and 40 CFR § 131.36(d)(12), establishes and implements the National Toxics Rule, and sets water quality standards for Alaska.

40 CFR § 141, Subpart B and F, the Safe Drinking Water Act Maximum Contaminant Levels and Maximum Contaminant Level Goals establishes cleanup standards for metals and organic compounds, including PCBs, in ground water.

7.3.2 Action-Specific ARARs

Toxic Substances Control Act, 15 U.S.C. § 2601 et seq., and 40 CFR §§ 761.60, 761.70, and 761.75 for the treatment, incineration, and disposal of PCBs.

Clean Water Act, 33 U.S.C. § 1311, 40 CFR § 122.26, direct discharges must meet technology-based standards, and storm water regulations for controlling discharges associated with industrial or construction activities.

Clean Water Act, 33 U.S.C. § 1314(b)(1) and 40 CFR Part 230, substantive requirements for dredge and fill requirements in waters of the United States.

40 CFR Part 403, pretreatment standards for discharges to Publicly Owned Treatment Works.

40 CFR §§ 268.45 and 268.48. RCRA Land Disposal Restrictions for Hazardous Debris treatment and disposal.

40 CFR § 261.24. RCRA Characteristic Hazardous Waste Determination is applicable for identifying soil that must be managed as hazardous waste (i.e. lead).

40 CFR 264, Subpart C, RCRA Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; Preparedness and Prevention is applicable for staging and implementing the remedy.

40 CFR 264.310(a), RCRA Subtitle C Landfill Regulation is relevant and appropriate for the cover design of a landfill, if appropriate.

40 CFR 268, Subparts C and D, Prohibitions on Land Disposal and Treatment Standards (i.e. lead and California List Wastes) is applicable for preventing the disposal of Characteristic and California List Wastes;

Alaska Air Quality Regulations 18 AAC Chapter 50 for dust suppression.

7.3.3 Location-Specific ARARs

Executive Order 11988, 40 CFR 6, App. A, action within floodplains, avoid adverse effects, minimize potential harm, restore and preserve natural and beneficial values.

Executive Order 11990, 40 CFR 6, App. A, action within wetlands, avoid adverse effects, minimize potential harm, restore and preserve natural and beneficial values.

7.3.4 To-Be-Considered (TBC) Guidances and Policies

EPA's Groundwater Protection Strategy, August 1984.

40 CFR Part 761, Subpart G, TSCA PCB Spill Cleanup Policy.

Guidance on Remedial Actions at Superfund Sites with PCB Contamination, OSWER Directive 9355.4-01.

8.0 COMPARATIVE ANALYSIS

In this section, the relative performance of each alternative in relation to each specific evaluation criterion is assessed. According to the RI/FS guidance, "the purpose of the comparative analysis is to identify the advantages and disadvantages of each alternative relative to one another so that the key tradeoffs the decision maker must balance can be identified".

The NCP requires that a CERCLA remedy provide overall protection of human health and the environment and comply with ARARs. These criteria are referred to as the "threshold criteria." The remaining five criteria that are analyzed in the FS are referred to as the "balancing criteria." The balancing criteria are:

- Long-Term Effectiveness and Permanence;

- Reduction in Toxicity, Mobility, or Volume (TMV) through Treatment;
- Short-Term Effectiveness;
- Implementability; and
- Cost.

The final two criteria, state acceptance and community acceptance, are evaluated by EPA after public comment on the Proposed Plan and are referred to as the "modifying criteria."

8.1 Overall Protection of Human Health and the Environment

Evaluation of this criterion focused on how exposure pathways (ingestion, inhalation, dermal contact of soils) are eliminated, reduced, or controlled through engineering or institutional controls.

Alternatives 1 and 2 would not be protective of human health and the environment because site conditions would remain fundamentally unchanged except for a ten inch soil cover in Alternative 2, which would not be protective, nor effective over the long term because activities on-site and/or weather would easily disturb or remove the ten inches of soil and expose the contaminated soils below. Alternative 2 does not comply with TSCA disposal requirements. They will not be discussed further. All other alternatives would be protective of human health and the environment. Alternatives 9 and 10 would provide the greatest degree of protection for receptors in Anchorage Alaska because the contaminants would be treated and/or disposed off-site. Alternatives 3, 4, 5, 6, 7, 8, 9, and 10 would be protective of human health and the environment.

The principal tradeoffs are between alternatives that provide permanent reductions in residual risks to human health and the environment through treatment and/or off-site disposal (Alternatives 5, 6, 7, 8, 9, and 10) and alternatives that are less permanent but involve less short-term risk and are easier to implement (Alternative 3). Alternative 4 provides a compromise in that it combines slightly lower levels of permanence relative to Alternatives 5, 6, 7, 8, 9, and 10, but has less short-term risk and easier implementability.

8.2 Compliance with ARARs

This criterion addressed whether each alternative meets the action-specific, chemical-specific, and location-specific ARARs relevant for each alternative at the site.

8.2.1 Assessment

It is anticipated that Alternatives 5, 6, 8, 9, and 10 would comply with all ARARs or meet the criteria for a waiver.

Alternatives 2, 3, and 4 would not meet the TSCA treatment and disposal requirements because no treatment or disposal in an approved chemical waste landfill would occur and, as proposed, these alternatives would not meet the criteria for a waiver under TSCA's landfill regulation.

Alternatives 2, 3, and 4 do not comply with Safe Drinking Water MCLs because they would not treat contaminated, on-site groundwater.

Alternative 7 would not meet RCRA LDR ARARs because the treatment method would not be able to remove the toxicity characteristic for lead, nor would it achieve the percent reductions required for a treatability variance.

Alternatives 5, 6, 7, 8, 9, and 10 would meet all TBCs.

Alternatives 3 and 4 do not meet the response objectives of the PCB Spill Cleanup Policy because soil containing greater than 10 mg/kg would not be excavated to a depth of 10 inches.

Alternative 3 does not meet the response objectives of the CERCLA PCB guidance because containment of low threat soils and treatment of principal threat soils would not be provided.

8.3 Long-Term Effectiveness and Permanence

The evaluation of alternatives under this criterion addresses the results of a remedial action in terms of the risk remaining at the site after response objectives have been met. The criterion is composed of two components: magnitude of residual risk and adequacy and reliability of controls used to manage residuals at the site.

As part of the Removal Action all liquid principle threats were removed and treated or disposed.

8.3.1 Magnitude of Residual Risk

Estimated residual long-term worker cancer risk levels in the range of 10^{-5} to 10^{-6} and an HI of less than 1.0 are estimated after remediation is completed for Alternatives 3 through 10. Protection of the environment, including groundwater, surface water, and sediments in the short term, would be achieved for each of these alternatives. The potential for impacts to groundwater from the LNAPL soil would be slightly higher for Alternative 3 than for Alternatives 4, 5, 6, 7, 8, 9, and 10, although no impacts to groundwater, outside of a very small on-site area, have been observed to date.

8.3.2 Adequacy and Reliability of Controls

Alternatives 5 through 10 have reliable controls to ensure their permanence. Alternative 4 relies on a cap and slurry wall which is not as reliable or permanent as solidification, thermal desorption or off-site disposal/treatment.

Institutional controls provided for Alternatives 4, 5, 6, 7, 8, 9, and 10 are consistent with the long-term management controls listed in the PCB guidance and are considered to be adequate and reliable for the levels of lead and PCB residuals that would be left at the site.

The institutional controls provided for Alternatives 2 and 3 (Capping) are not anticipated to be adequate for long-term protection of human health, surface water, and sediments. Alternative 1 does not include institutional controls.

8.3.3 Assessment

Long-term effectiveness and permanence at the site would be greatest for Alternatives 9 (Off-site Landfill) and 10 (Off-site Incineration). The maximum residual long-term worker cancer risk is in the range of 10^{-5} to 10^{-6} and the HI is less than 1.0. Protection of the environment would be achieved for each of these alternatives. Adequate and reliable controls would be provided for the concentrations of lead and PCBs left on-site. Future land use would be unrestricted except for a restriction on residential use.

Alternative 8 (Thermal Desorption) was ranked next highest for long-term effectiveness and permanence. Residual long-term worker cancer risks in the range of 10^{-5} to 10^{-6} are estimated for this alternative. Long-term protection of the environment would be achieved. Future land use, however, would be restricted by the presence of elevated concentrations of lead in soil. The alternative includes reliance on institutional controls to protect workers from exposure to lead and to maintain the soil cover.

Alternatives 5 (Stabilization/Solidification with Treatment of PCB Principal Threat by Thermal Desorption) 6 (Stabilization/Solidification), and 7 (Soil Washing) were ranked next highest for long-term effectiveness and permanence. The maximum residual long-term worker cancer risk is also in the range of 10^{-5} to 10^{-6} and the HI is also less than 1.0. Protection of the environment would be achieved for each of these alternatives by either destruction of principle threat COCs or the immobilization of all soils above cleanup levels. Although, higher levels of COCs in treated soil would be left on-site compared to Alternatives 8, 9, and 10, long-term groundwater monitoring would be required to assess protection of groundwater, and future land use will be restricted to maintain industrial exposures. Additionally these alternatives would rely on institutional controls and long-term maintenance of solidified soils and soil cover.

Alternative 4 (Containment with Treatment of Principal Threats by Stabilization) was ranked significantly lower. It also achieves a maximum residual long-term worker cancer risk in the range of 10^{-5} to 10^{-6}; an HI of less than 1.0, and protection of the environment. However, while principle threat COCs are immobilized, destruction of COCs would not be achieved and the majority of PCB and lead contaminated soil would be untreated and left on-site under a cap. Institutional controls would be required for maintenance and monitoring of the cap. Permanence of the cap would depend on future land use, and would rely more on institutional controls to keep it intact. A cap and slurry wall are less permanent and reliable in the long term than solidification of soils. Future catastrophic events, such as flooding and seismic events would pose a significant threat to the cap and require greater operation, maintenance and monitoring procedures than solidification or off-site disposal.

Alternative 3 (Capping) was ranked lower than Alternative 4, although the residual long-term worker health risks are 10^{-5} to 10^{-6} and the HI is less than 1.0, and impacts to the environment are not anticipated. All COCs (except the emergency removal action and scrap removal action wastes) would remain on-site as untreated residuals. The LNAPL soil would not be treated or contained, and some potential for long-term groundwater impacts would exist. Similar to Alternative 4, a higher reliance on future land use restrictions would be required to maintain the cap.

8.4 Reduction of Toxicity, Mobility, or Volume Through Treatment

This evaluation focuses on the NCP expectation of reduction of toxicity, mobility, or volume (TMV) for principal threats. The components of the criterion are:

- Treatment process used and materials treated
- Amount of hazardous material destroyed or treated
- Degree of expected reductions in toxicity, mobility, or volume
- Degree to which treatment is irreversible
- Type and quantity of treatment residuals remaining after treatment

8.4.1 Discussion

Alternatives 8 and 10 are expected to achieve significant reductions (anticipated to be 95% or greater) in TMV through treatment. All soil above cleanup levels would be remediated. It is estimated that greater than 90% of the mass of lead would be immobilized and greater than 90% of the mass of PCBs would be destroyed.

Alternatives 5, 6, and 7 also treat and/or contain all soil above cleanup levels; however, these were downgraded relative to Alternatives 8 and 10 because of lower TMV reductions and the volume increase (estimated to be 15 to 30%) associated with stabilization/solidification (all soils are stabilized/solidified in Alternative 6; all soil except principal threat PCBs are stabilized/solidified in Alternative 5; and sludges and

lead-contaminated soils are stabilized as part of Alternative 7). Average PCB reductions of 93% are estimated for Alternatives 5 and 6 (based on TCLP reduction, however TCLP reductions are difficult to reproduce and leaching of PCBs is not a significant issue). PCB reductions of 57% to 94% were observed during pilot testing for Alternative 7. For Alternative 7, lead reductions as low as 7% and as high as 99% were observed during pilot testing. Alternative 5 was ranked higher than 6 or 7 because destruction of principal threat PCBs would be achieved.

Alternatives 4 (Containment with Treatment of Principal Threats by Stabilization) was downgraded somewhat because low threat soil would not be treated.

Alternative 9 (Off-site Landfill) was rated significantly lower because the only reduction in TMV that would be achieved is associated with stabilization that is required for lead.

Alternatives 3, 4, 6, and 9 would produce little or no process residuals. Alternative 7 followed by 5, 8, and 10 produce the greatest amount of process residuals that would require further treatment or off-site disposal. Alternative 5 produces an intermediate amount of process residuals.

Alternatives 4, 5, 6, 7, 8, and 10 would satisfy the statutory preference for treatment as a principal element. Alternatives 3 and 9 would not satisfy the statutory preference.

8.4.2 Assessment

Alternatives 8 (Thermal Desorption) and 10 (Off-site Incineration) are ranked highest. Lead would be treated using BDAT and greater than 95% of PCBs would be destroyed. Alternative 5 (Stabilization/Solidification with Treatment of PCB Principal Threats by Thermal Desorption) is ranked next highest. Lead in principal threat soil would be treated using stabilization/solidification and greater than 95% of PCBs contained in principal threat soil would be destroyed.

Alternatives 4, 6 and 7 are comparable. Lead would be treated by stabilization/solidification and PCBs would be treated using solidification (80 to 99% reduction in mobility). The tradeoffs involved in rating the alternatives are that Alternative 7 would produce relatively large quantities of process residuals, whereas, Alternative 6 would produce a relatively large volume increase, while Alternative 4 presents a compromise in that a somewhat smaller mass of COCs would be treated but relatively small residual amounts and volume increases would be produced.

Alternative 9 (Off-site Disposal) is ranked significantly lower. The treatment for toxicity employed would be minimal and the wastes would be transferred to another location to contain.

8.5 Short-Term Effectiveness

In this section, two criteria are considered: protection of the community, workers, and the environment during remedial actions and the time until remedial response objectives are achieved.

8.5.1 Short-Term Protection of the Community, Workers, and the Environment

Alternative 3 (Capping) involves no excavation, above ground treatment, or transport of wastes; therefore, the associated community, worker, and ecological exposures during the remedial actions are lowest.

Alternatives 4 (Containment with Treatment of Principal Threat Soil by Stabilization), 5 (Stabilization/Solidification with Treatment of PCB Principal Threats by Thermal Desorption) 6 (Stabilization/Solidification), 7 (Soil Washing), 8 (Thermal Desorption), 9 (Off-site Disposal), and 10 (Off-site Incineration) are generally similar in that the potential for human or environmental exposures exists during excavation activities. The potential community and worker exposures include physical injury and inhalation of contaminated dusts. The potential environmental exposures are releases of contaminated dusts and runoff water to surface water or wetlands and mobilization of COCs to groundwater. The potential exposures are significantly less for Alternatives 4 and 5 than Alternatives 6, 7, 8, 9, and 10 because of the much smaller volumes of excavation involved.

Alternatives 5, 7, 8, 9, and 10 have additional potential exposures during transportation of contaminated wastes or process residuals to the continental U.S. for treatment/disposal. These potential exposures are associated with overland transport, overseas transport, and on- and off-loading. Alternatives 9 and 10 involve the largest volumes of transported wastes and Alternative 5 the smallest volume. Alternative 10 also includes potential releases of COCs to air at the incinerator site and exposures during treatment and transport of lead-contaminated ash.

Alternatives 4, 5, 6, 7, and 8 involve additional potential exposures resulting from on-site treatment of soil. The potential exposures include physical hazards and releases of contaminated residuals. The greatest potential exposure from release of treatment residuals is estimated to result from dry, lead-contaminated dusts and volatile COCs associated with the thermal desorption treatment (Alternatives 5 and 8). The potential exposures are greater for Alternative 8 than Alternative 5 because of the larger volume of soil treated. Alternative 7 is anticipated to result in an intermediate level of exposures during treatment including process water management, while the exposures associated with the stabilization/solidification treatment used in Alternatives 4 and 6 are expected to be less.

8.5.2 Time Until Remedial Response Objectives are Achieved

The time frame for completing Alternatives 3 (Capping) is shortest because no excavation is involved. Excavation of smaller volumes of soil at shallower depth is included in Alternatives 4 and 5, and delays due to excavation are not anticipated. The times for completing excavations under Alternatives 6, 7, 8, 9, and 10 are likely to be longer because excavation of relatively large volumes of soil, likely including soil beneath the groundwater table, is required. Excavation times could be lengthened if wet weather, which is common in Anchorage in the summer, is encountered. For Alternatives 9 (Off-site Disposal) and 10 (Off-site Incineration), the time to obtain all necessary approvals for shipment of wastes to the off-site treatment/disposal facility could be significant.

The time frames for completing the treatment component of Alternatives 5 (Stabilization/Solidification with Treatment of PCB Principal Threats by Thermal Desorption) 7 (Soil Washing), and 8 (Thermal Desorption) would likely be longer because of factors including:

- Pilot and/or pre-remediation testing of equipment
- Uncertainty of equipment availability
- Multiple treatment/containment processes

It is reasonable to expect that each of Alternatives 3, 4, 6, 9, and 10 can be completed in a single construction season. Despite the relatively small treatment volumes under Alternative 5, a significant potential exists that the Alternative would not be completed in a single construction season because of the need for two separate treatment processes and the uncertainties of equipment availability, effectiveness, and implementability. Alternatives 7 and 8 have the greatest potential for extended remediation times.

8.5.3 Assessment

Alternative 3 (Capping) has the highest short-term effectiveness. No excavation or above ground treatment is involved; therefore, the associated community, worker, and ecological exposures during the remedial actions are small. Human exposure and the potential for migration of COCs to surface water or groundwater are significantly reduced in a relatively short (one construction season) time period. The short-term effectiveness of Alternative 4 (Containment with Treatment of Principal Threats by Stabilization) is nearly as good as Alternative 3 (Capping). Excavation volumes are limited, no significant exposures have been identified for the treatment process, and it is anticipated that the remediation can be completed within a single construction season using locally available contractors and materials. Alternative 6 (Stabilization/Solidification) is similar to Alternative 4 but was downgraded because of the larger excavation volumes, although the short-term impacts due to excavation could be prevented by using an in-situ process option and mitigation methods such as dust control.

Overall short-term effectiveness is similar for Alternatives 5, 9, and 10. The tradeoffs are that smaller volumes of soil are excavated and less waste is transported over long distances with Alternative 5, but potential exposures and schedule delays associated with the treatment process are greater.

The poorest short-term effectiveness is associated with Alternatives 7 (Soil Washing) and 8 (Thermal Desorption). Both involve excavation of large volumes of soil, relatively complex treatment processes, and transport of residual wastes over long distances. Each involves potential exposures and schedule delays associated with the treatment process.

8.6 Implementability

In this section, three criteria are compared: technical feasibility, administrative feasibility, and availability of services and materials.

8.6.1 Technical Feasibility

Few technical feasibility considerations have been identified for Alternative 3 (Capping).

Greater implementability concerns exist for Alternatives 5, 6, 7, 8, 9, and 10 because of the potential need to control groundwater during excavation near the groundwater table. An additional consideration is availability of space to conduct excavation, soil staging and dewatering (if required), and treatment/loading.

Few concerns exist with respect to the ability to successfully operate the stabilization/ solidification technology (Alternatives 4, 5, and 6). Stabilization is a common remedy chosen for CERCLA sites and has been accepted in EPA guidance as a treatment technology for PCBs. Stabilization/Solidification has also been identified as Best Demonstrated Available Technology (BDAT) for treating lead under the land disposal restrictions. Treatability studies conducted on soil from the site indicate that leaching of lead (measured using the TCLP test) is reduced by greater than 99% and leaching of PCBs is reduced by 80 to 99% (not a significant issue) following stabilization/solidification treatment. The FS provides a summary of the detailed analyses conducted to address potential implementability and permanence issues associated with stabilization/solidification. These analyses confirmed that the technology is effective, permanent, and implementable at the site. A potential implementability concern for Alternatives 4, 5, and 6 is designing the stabilized monolith to withstand freeze thaw conditions at the site. These concerns would be addressed during remedial design.

The greatest technical feasibility considerations are associated with soil washing (Alternative 7) and thermal desorption (Alternatives 5 and 8). These considerations are related to uncertainties in the ability to successfully operate the technologies and possible schedule delays resulting from technical problems and equipment unavailability.

8.6.2 Administrative Feasibility

Administrative feasibility considerations are expected to be low for Alternatives 3 (Capping), 4 (Containment with Treatment of Principal Threat Soil by Stabilization), and 6 (Stabilization/Solidification). Some concerns related to the long distance transport of contaminated material exist for Alternatives 5 (Stabilization/Solidification with Treatment of PCB Principal Threats by Thermal Desorption) 7 (Soil Washing), 8 (Thermal Desorption), 9 (Off-site Disposal), and 10 (Off-site Incineration). Additional implementability considerations for Alternatives 5, 7, and 8 are related to meeting process water disposal and air emissions (Alternatives 5 and 8 only) requirements.

8.6.3 Availability of Services and Materials

Availability of services and materials is not anticipated to be a problem for Alternatives 3, 4, 6, 9, and 10. Alternatives 3, 4, and 6 can be implemented using local materials and contractors. Treatment/disposal under Alternatives 9 and 10 would require services available only in the lower 48 states. Availability of services and materials is a concern for Alternatives 5, 7, and 8. Availability of services is particularly a concern for Alternatives 5 and 8 since only one contractor can currently supply the process option evaluated. It is unlikely that Alternatives 5, 7, and 8 can be completed using local contractors.

8.6.4 Assessment

The fewest considerations are associated with Alternatives 3 (Capping), 4 (Containment with Treatment of Principal Threat Soil by Stabilization), and 6 (Stabilization/Solidification). Alternative 6 was downgraded somewhat because of technical implementability considerations related to excavation near the groundwater table.

Alternative 5 (Stabilization/Solidification with Treatment of PCB Principal Threats by Thermal Desorption) is ranked next highest for implementability, but was downgraded significantly relative to Alternative 6 (Stabilization/Solidification) because of uncertainties of the ability to successfully operate the thermal desorption equipment, the potential for schedule delays due to equipment problems, the need to meet air emissions and process water disposal requirements, administrative considerations related to long-distance transport of wastes, and the potential for poor availability of services, and the difficulties in operating multiple treatment trains on a site with limited available space.

Alternative 7 (soil washing) is ranked with Alternative 5 due to implementability considerations summarized above, including wash water volume and corresponding treatment requirements, and potential operational difficulties due to input materials variability. Excavation near the water table, equipment reliability, and transport of

residual waste over long distances are additional implementability considerations associated with this alternative.

Alternatives 9 (Off-site Landfill) and 10 (Off-site Incineration) are ranked below Alternative 5. The tradeoffs are that excavation near the groundwater table and transport of larger volumes of waste would be required under Alternatives 9 and 10, and this would more than balance the greater concerns with equipment availability and reliability and meeting air emissions and process water disposal requirements that are associated with Alternative 5.

Alternative 8 (Thermal Desorption) is ranked lowest for implementability. This alternative has numerous implementability considerations, including excavation near the water table, equipment availability and reliability, process water disposal and air emissions (Alternative 8) requirements, and transport of waste over long distances.

8.7 Cost

Costs for the ten alternatives range from a low of $0.3 million for Alternative 1 (No Action) to a high of $21.9 to $34.3 million for Alternative 10 (Off-site Incineration). The remaining eight alternatives rank as follows (from low to high):

- Alternative 2 (Limited Action)—$1.6 million
- Alternative 3 (Capping)—$3.1 million
- Alternative 4 (Containment with Treatment of Principal Threat Soils by Stabilization/Solidification)—$4.7 to $4.8 million
- Alternative 6 (Stabilization/Solidification)—$4.7 to $5.8 million
- Alternative 7 (Soil Washing)—$6.8 to $9.1 million.
- Alternative 5 (Stabilization/Solidification with Treatment of PCB Principal Threats by Thermal Desorption)—$7.6 to $9.1 million
- Alternative 9 (Off-site Landfilling)—$8.4 to $12.3 million
- Alternative 8 (Thermal Desorption)—$9.6 to $12.3 million

8.8 State Acceptance

The State of Alaska concurs with the selected remedy.

8.9 Community Acceptance

Comments received during the Public Review were both receptive and opposed to the preferred alternative. Comments opposed were mainly concerned with future releases of contaminants from the TSCA landfill. Some of these concerns will be addressed during remedial design of the landfill. More complete responses to the comments received are contained in the Responsiveness Summary attached to this Record of Decision.

9.0 THE SELECTED REMEDY

9.1 Remedy Description

Based upon consideration of the requirements of CERCLA, the detailed analysis of the alternatives using the nine criteria, and public comments, EPA has determined that Alternative 6 (Solidification/stabilization), with changes from the feasibility study described below, is the most appropriate remedy for the Standard Steel and Metals Salvage Yard Site in Anchorage, Alaska.

The key components of the selected remedy include:
(Refer to Table 9-1 for cleanup and treatment level summary)

- Removal of regulated material stockpiled on-site and investigation derived wastes with subsequent disposal in a RCRA Subtitle C or D landfill, or recycling of materials;
- Off-site disposal of remaining scrap debris by recycling or disposal in a RCRA Subtitle D landfill or, if the debris is a characteristic hazardous waste or contains greater than 50 mg/kg PCBs or 10ug/100cm^2 by standard wipe tests, treatment and disposal in a RCRA Subtitle C or TSCA landfill;
- Excavation and consolidation of all soils exceeding a 10 mg/kg PCBs or 1000mg/kg lead cleanup level;
- Treatment of all soils at or greater than 1000 mg/kg lead or 50 mg/kg PCB, or greater, by stabilization/solidification;
- On-site disposal of stabilized/solidified soils and excavated soils between 10 mg/kg and 50 mg/kg PCBs in a TSCA landfill;
- Excavation of soils impacted above 1mg/kg PCBs and 500 mg/kg lead from the flood plain and consolidation of these soils elsewhere on the site;
- Maintenance and repair of erosion control structure on bank of Ship Creek;
- Maintenance of solidified/stabilized soils and the landfill;
- Institutional controls to limit land uses of the site and, if appropriate, access;
- Monitoring of groundwater at the site to ensure the effectiveness of the remedial action.

Scrap Debris Disposal

Approximately 150 tons of debris generated during the scrap removal action remain stockpiled on-site. All scrap and debris, including that generated during soil pre-screening and located in the channel of Ship Creek, would be transported off-site and disposed at a permitted Subtitle C, D or TSCA landfill. Disposal will comply with all applicable rules and regulations. Scrap metal is to be recycled through a legally permitted scrap metal recycler. This recycling must include resmelting/melting of all

scrap metal. (Scrap metal may be incorporated into the on-site TSCA landfill if it will not compromise the integrity of the landfill.)

Regulated Material Removal

Approximately 290 drums are currently stored on-site. The drums contain materials stored by EPA during the emergency removal actions, oil and fuel salvaged during the scrap removal actions, and decontamination wastes and personal protective equipment generated during the RI field work. Also remaining on-site are a shipping container with the former site incinerator, various batteries, and other wastes. Off-site disposal of some of these materials is regulated by RCRA, depending on the specific waste. Disposal options include off-site landfilling or off-site incineration. Final disposal actions will be decided during remedial design and will be based on cost, and availability of services. Disposal will comply with all applicable rules and regulations.

Excavation

All soils above 10 mg/kg PCBs and all soils above 1000 mg/kg lead will be excavated and placed in the on-site TSCA landfill. Soils within the flood plain will be excavated when it exceeds 1 mg/kg PCBs or 500 mg/kg lead and placed elsewhere on-site.

Contaminant levels will be determined prior to excavation by current data or additional sampling. Soils may not be stockpiled in a manner which would reduce the contaminant concentrations to below the treatment level of 50 mg/kg PCBs or 1000mg/kg lead, unless the stockpiled soils will be treated.

Soil above cleanup levels would be excavated, screened and pre-processed to remove materials not suitable for stabilization/solidification. Soil containing less than 1,000 mg/kg lead and less than 50 mg/kg PCBs but greater than 10 mg/kg PCB will be consolidated on-site in the TSCA landfill at a depth of greater than one foot below the surface, but above the zone of groundwater fluctuation. The change of the subsurface cleanup level contained in the feasibility study from 50 mg/kg to 10 mg/kg PCBs is appropriate to insure future site activities and flood events do not expose greater than 10 mg/kg PCBs contaminated soils. This change is more cost effective than requiring a TSCA cap over the entire site and associated monitoring and maintenance of the soils and cap. If soils with PCB concentrations between 10 mg/kg and 50 mg/kg are placed on the top of the landfill a cover which will prevent erosion, infiltration and contact with untreated soils will be required above those soils.

Grading/Backfilling/Cover

The zone of groundwater fluctuation would be backfilled with clean fill (less than 1 mg/kg PCBs). The site will be graded to prevent surface water runoff to Ship Creek (see Stormwater Management section). Excavated areas above the groundwater fluctuation

zone will be backfilled with soils containing less than 10 mg/kg PCBs. The surface of the site will be graded with clean soils which will support a vegetative cover or paved to prevent erosion of surface soils. If no immediate reuse of the TSCA landfill occurs than it will be covered with a protective cap to (1) allow the landfill to function with minimal maintenance and (2) promote drainage, reduce freeze thaw effects and minimize erosion or abrasion of the treated soils. 40 CFR 264.310(a) is relevant and appropriate for this action.

Soil Pretreatment/Prescreening

All soil that needs to be treated (greater than or equal to 50 mg/kg PCBs and 1000 mg/kg lead) would go through a pretreatment step to screen out material which is oversized and may interfere with the treatment process. Potential material to be screened out includes wood, cardboard, wire, cobbles and scrap debris. As observed during the site investigations, the scrap debris include predominantly pieces of metal and wood. If remedial design determines that scrap will not interfere in the performance of the monolith than this material may be included in the monolith. Wood and other organic debris will be screened out and disposed of off-site pursuant to all rules and regulations (see above discussion on Scrap Debris Disposal)

Soils and debris will be kept wet during screening to minimize dust. The cobbles may be separated from the debris in an additional screening step. The cobbles could be used along fill material to backfill the excavations or be disposed of in the TSCA landfill.

Stabilization/Solidification Process

The excavated, pre-processed soil would be added to a pug mill where it would be mixed with the stabilizing additives. After pre-processing the total volume of soil to be treated would be approximately 7,700 to 12,600 cubic yards. A mixture of 16% cement and 8% fly ash, which was determined to be the most effective combination during the treatability study is anticipated as a likely mix ratio. However, additional design testing will be conducted to refine the mix ratio to minimize volume increases, reduce freeze thaw effects and maximize the solidified mass's long-term durability and potential as a building platform. The addition of pozzolans will be evaluated to reduce pH changes in the solidified soils and temperature increases during curing. The LNAPL will be included with the soil that is stabilized/solidified if it is determined that it will not interfere with curing and is not considered a liquid. If the LNAPL is considered a liquid or will interfere with the curing of the monolith then the LNAPL will be collected and transported off-site for incineration. Contaminated soils associated with the LNAPL will be stabilized if they do not interfere with the stabilization process.

An expanded treatability study shall be conducted as soon as practicable to further assess the stability and physical characteristics of the stabilization/solidification process and to demonstrate the predicted effectiveness of the stabilization/solidification process. The

recommended tests shall include, but not be limited to: (1) PSA Mod. MCC-1 Static Leach Test (U.S. DOE-5820) or comparable test procedure; (2) TCLP analysis on the solidified material; (3) additional leaching test(s) on solidified samples subjected to test procedures to simulate long term weathering such as freeze-thaw, compression, etc.; and (4) evaluation of chemical/physical properties such as temperature and pH on the solidification process. A life expectancy of 1000 years will be a design goal. Life expectancy is defined as the time before contaminants are released above design criteria from the TSCA landfill.

If inadequate durability is obtained, additional engineering controls (for example, changing the agent: soil ratio, increasing the burial depth, or providing a low-permeability liner above and/or below the treated soil) would be implemented at the discretion of EPA. Based on treatability study results, a soil volume increase of about 15 to 30% is anticipated after stabilization.

A potentially important factor in evaluating stabilization/solidification is the effect of the presence of the solidified mass on future land use. The solidified soil would not be placed within the 100-year flood plain and would be placed at least one foot above the maximum groundwater table elevation. Clean soil (less than 1mg/kg PCBs) and other fill would be used to replace soil excavated from the groundwater table zone. In the event there is no planned future use of the landfill as a building foundation or parking area, a cover to protect the landfill will be placed to provide a wearing surface, prevent infiltration and minimize erosion. The cover will be maintained until reuse of the monolith occurs. The ground surface elevations will increase due to the volume increase from the treatment and the addition of the cover layer (see Grading/Backfilling/Cover section). The solidified mass will be configured to accommodate future site development to the greatest extent practicable.

There are potential short-term human health and environmental impacts associated with excavation and the solidification/stabilization process. One potential impact is dust, which could be inhaled by workers or members of the community or could migrate to surface water or adjacent properties. The steps that would be taken to minimize these impacts include use of dust suppressants and collection and analysis of air samples. A second potential impact is migration of COCs to ecological receptors via surface water runoff. These impacts would be controlled by covering impacted soils and using berms and diversion ditches. A final potential impact is physical injury to workers. These impacts would be controlled by instituting appropriate health and safety procedures. A third potential impact is the volatilization of PCBs during the solidification process. This potential will be evaluated during treatability testing and appropriate measures will be taken to prevent volatilization of PCBs or control the release of volatilized PCBs during treatment.

In order to evaluate the effectiveness of the stabilization/solidification process, the following physical and chemical tests of treated solidified soil shall be established as

minimum performance standards. The minimum performance standards shall be demonstrated in the laboratory and in field testing during construction.

1. The Toxicity Characteristic Leaching Procedure (TCLP) test for PCBs shall be .5 ug/L or less. For lead the values shall be 5 mg/L or less. These values reflect the MCL for PCBs and the Maximum Concentration of Contaminants for the Toxicity Characteristic test, pursuant to 40 CFR 261.24, Table 1.

2. The 28-day unconfined compressive strength shall be greater than 50 psi (ASTM Method D2166 or equivalent). Depending upon the additive mix ratio this test may be inappropriate and another test will be utilized to determine unconfined compressive strength, with the approval of EPA.

3. The triaxial permeability shall be less than 1 x 10[-7] cm/sec (USACE Method 1110-2-1906 or equivalent).

4. PSA Mod. MCC-1 Static Leach Test (U.S. DOE-5820) This test will demonstrate that the treated soils do not leach lead above 15 ug/L. The goal is to not increase the leachability of lead under neutral water conditions.

If during design testing it is determined that the Performance Standards for unconfined compressive strength and triaxial permeability will reduce the permanence of the containment system these standards may be altered with the approval of EPA. Engineered controls shall be employed to compensate for the reduction of compressive strength and permeability.

Confirmation Sampling

All soils to be excavated, treated or disposed will include confirmation sampling to determine the amount of soil to be excavated and treated and to document that soils above cleanup levels are removed and treated if necessary. Confirmation testing would include analysis for both lead and PCBs. If the excavation testing indicates that the lead or PCB cleanup level is exceeded, additional material would be excavated vertically and horizontally until cleanup levels are met. Samples of the stabilized soil will be collected for future evaluation and testing.

Treatment Equipment and Staging Areas Preparation

A soil staging area would be set up on the site. The area, which would be on the order of 200 by 200 feet, would be lined by plastic sheeting. An area on the order of 100 feet by 200 feet, depending on the needs for the project, would be cleared near the soil

staging area and compacted prior to construction of a bermed pad for equipment set up. Utility hook-ups would be established as appropriate for the equipment.

Consolidation of Soil from Flood Plain Within Upland Areas

Soils within the floodplain which contain lead or PCBs at concentrations at or greater than 500 mg/kg lead or at or greater then 1 mg/kg PCBs would be excavated and consolidated within the existing fence line outside of the 100 year floodplain. These lower action levels (compared to the 1,000 mg/kg lead and 10 mg/kg PCBs cleanup levels for non-flood plain soils) would be used to provide an additional margin of protection in ecologically-sensitive areas. Figure 2-3 shows the approximate extent of the 100-year flood plain (based on 1988 mapping). A small flood plain area beyond the southwest corner of the fence contains soil with greater than 1 mg/kg PCBs. A comparison of Figure 2-3 with Figures 1-6 and 1-8 indicates that no mapped wetlands contain soil with greater than 500 mg/kg lead or 1 mg/kg PCBs. The area disturbed by excavation would be restored to the original grade and revegetated with native species. The consolidation action would not include any excavation or disposal of hazardous waste or TSCA-regulated material.

Disposal of Treated Soils

Treated soil and soils at or above 10 mg/kg PCBs would be disposed into an on-site TSCA landfill. The location and dimensions of the landfill shall be determined during remedial design and must be outside the 100-year floodplain. The relevant TSCA regulations for design are provided in 40 CFR § 761.75(b), except the requirements waived pursuant to 40 CFR § 761.75(c)(4) below. Solidified soils with lead or PCB concentrations at or greater than 1,000 or 50 mg/kg, respectively, would not be replaced in the top foot or in the zone of groundwater fluctuation. Surface concentrations of the treated soils will be less than 10 mg/kg PCBs. Routine maintenance and inspection of the TSCA landfill shall be conducted during groundwater monitoring events and after any seismic or flood event. The landfill will be designed and located to maximize future use of the site, specifically to utilize the solidified soils as a building foundation or parking area. If use of the landfill as a foundation or parking lot does not occur a cover consisting of an impermeable liner, drainage layer, and erosion control layer will be provided. These layers will consist of a impermeable (less than 1xE-6 permeability) liner, a one foot boundary layer and one foot of growth media.

The following technical requirements specified in 40 CFR § 761.75(b) are waived: (1),(2),(3),(7), and (8). 40 CFR § 761.75(b)(9)(i) may be waived if conditions discussed below occur. The following evaluation justifies waiving these requirements:

- Soils. This standard specifies that the landfill be located in a thick, relatively impermeable soil or rock formation or a low-permeability in-place soil with a minimum thickness of 4 feet or on a compacted, low

permeability liner with a minimum thickness of 3 feet. [40 CFR § 761.75(b)(1)]. The Selected Remedy includes encapsulation of the COCs. Through proper design, this encapsulation will be equivalent to the relatively impermeable soils, low permeability soils, and low permeability liner specified in the standard. The solidified mass will have an extremely low permeability such that leachate generation out of the disposal unit will be minimized. The treatability study completed for the site supports this determination. The hydraulic conductivities of solidified treatability study samples ranged from 8×10^{-8} to 7×10^{-7} cm/sec, similar to the hydraulic conductivity requirement provided in 40 CFR § 761.75(b)(1). Additionally, research and applicable experience at CERCLA sites provide further evidence that a properly designed stabilization/solidification remedy can adequately, through groundwater releases, protect against an unreasonable risk of injury to health or the environment by reducing leachate generation to extremely low levels.

- Synthetic Membrane Liners. This standard specifies that a synthetic membrane liner with a minimum thickness of 30 mils will be used when, in the judgment of the Regional Administrator, the hydrologic or geologic conditions at the landfill require such a liner to provide at least a permeability equivalent to the soils described above. [40 CFR § 761.75(b)(2)]. This requirement addresses a bottom liner under the waste. As noted above, the soil treatment design will be developed such that the stabilized/solidified soils provide a level of protection comparable to a low permeability liner, (e.g. a 30 mil synthetic bottom liner system as specified in the regulations). In general, a top liner would be needed at a disposal site to minimize infiltration into the waste if hydrologic or geologic conditions were such that precipitation could enter the waste at a rate greater than it could leave the waste. This would not be the case with the selected remedy because the treated soils would have an extremely low permeability as compared to the underlying and surrounding native soils. Following the path of least resistance, precipitation would instead tend to migrate around the solidified mass rather than through it. Therefore waiving this requirement will not present an unreasonable risk of injury to health or the environment.

- Hydrologic Conditions. In part, this standard specifies that the bottom of the landfill be at least 50 feet above the historical high water table. [40 CFR § 761.75(b)(3)]. The very minimal amount of leachate that could result from a properly designed and implemented solidification/stabilization remedy would not result in excessive risk to human health or the environment. This determination is supported by the groundwater sampling results, the treatability study, and the soil stabilization/solidification durability assessment. Waiving this requirement

will not present an unreasonable risk of injury to health or the environment even though not located 50 feet above the high water table.

- Leachate Collection. This standard describes methods for collection and analysis of leachate produced by the landfill. [40 CFR § 761.75(b)(7)]. The amount of leachate produced from a properly designed and implemented solidification/stabilization remedy would be minimal because precipitation would travel around, rather than through, the treated soils. Additionally, as shown in the treatability study, the concentration of PCBs in the leachate is expected to be low (the average concentration of PCBs in 8 treatability study TCLP samples was 0.26 μg/L, as compared to the PCBs MCL of 0.5 μg/L). The combination of low volumes of leachate and low PCB concentrations within the leachate make it appropriate to waive this requirement because such a waiver will not present an unreasonable risk of injury to human health or the environment.

- Chemical Waste Landfill Operations. Operation requirements contained in 40 CFR § 761.75(b)(8) are not applicable to the TSCA landfill on this site because no liquid or other types of wastes other than the solidified soils and low concentration PCB soils will be placed in it before final closure.

- Fence, Wall or Similar Device. The requirement, contained in 40 CFR § 761.75(b)(9)(i), to place a fence, wall or similar device around the landfill will not be waived unless the solidified soil mass is designed and used as a building foundation or it is paved over for a parking lot. A waiver of fence or other access barrier is appropriate under these two scenarios because access to unauthorized persons and animals would be effectively prohibited by the building or pavement.

Based on the evidence presented in the remedial investigation and feasibility study and other information contained in the administrative record for this Record of Decision, it has been determined that waiving these requirements will not result in an unreasonable risk of injury to health or the environment from PCBs.

Waste Shipment

Shipment of wastes would be conducted as part of debris, and potentially LNAPL disposal. This debris and wastes will be shipped pursuant to Department of Transportation rules and regulations regarding transport of hazardous waste, if applicable. All off-site facilities will be in compliance with the off-site Disposal Rule (40 CFR 300.440)

Repair of Erosion Control Wall Along Ship Creek

The erosion control wall constructed during the Removal Action along Ship Creek will be repaired and, where needed, reconstructed. Repair and maintenance of this structure is needed to meet the goals of the Floodplain and Protection of Wetlands Executive Orders, as well as, to ensure protection of the TSCA landfill once constructed. Repair and, where necessary, reconstruction of the erosion control wall must comply with the substantive requirements of Section 404(b)(1) of the Clean Water Act and its implementing regulations.

Flood Evaluation

As part of Remedial Design a study will be conducted to evaluate the 100 year and 500 year flood potential for Ship Creek and potential impacts on the site. This study will produce an updated flood map depicting the 100 year flood plain and 500 year flood plain for the site. The results of the study will be used to design appropriate controls to prevent damage to the landfill from flooding.

Institutional Controls

In addition to the remedial actions used to treat COCs, institutional controls would be used to prevent unacceptable exposure to contamination remaining at source areas at concentrations above acceptable levels. Institutional controls for soil left on-site that contains greater than 1 mg/kg PCBs were selected following EPA guidance for long-term management controls of CERCLA PCB sites. Specific controls will include restrictions limiting future land use, preventing groundwater use, and limiting site access. EPA guidance suggests selecting institutional controls for solidified PCBs based on mobility (TCLP) testing and exposure potential.

Deed Notice and Land Use Restrictions

A deed notice will be recorded on the title records for the site, if possible, and will notify any subsequent purchaser and/or successor in interest that the property is subject to a CERCLA Record of Decision. The selected cleanup levels for the COCs are based on a future industrial land use scenario. Consequently, land use restrictions must be implemented at the site to assure that no residential land uses, or commercial uses with potential chronic exposures of children (i.e., day care center) are allowed. To assure long-term protectiveness, the land use restrictions shall run with the land, bind all successors in interest, and be recorded in the property records. The objectives of the land use restrictions are:

- Ensure that site use continues to be industrial or commercial and prevent use of the site for commercial developments that involve potential chronic exposures of children to soil (e.g., use of the site for a day care center);

- Restrict activities at the site that could potentially impair the integrity of the TSCA landfill; and
- Prevent movement of soil containing greater than 1,000 mg/kg lead or 10 mg/kg PCBs to the surface or within the top foot of soil where chronic long-term worker exposures could occur.

Groundwater Use Restrictions

Groundwater use restrictions are necessary to prevent the installation of groundwater supply wells at the site. The property interest implemented to assure acceptable future land use shall include provisions for restricting use of groundwater underlying the site for any purpose.

In addition, to the recorded restrictions all available regulatory controls shall be undertaken by providing written notification of restrictions and site conditions to local, regional, and state agencies, departments, and utilities. The property owner(s) will be responsible for providing these restrictions.

Access Restrictions

Access to all areas impacted by soil contamination shall be limited during the construction of the remedial action. Access to the landfill should be prohibited to the general public and limited to long or short-term workers in compliance with 40 CFR § 761.75(b)(9)(i), which requires a six foot woven mesh fence, wall, or similar device. However, if the solidified soil mass is designed and used as a building foundation or parking lot, this requirement may be waived. Long term public access will be limited to those areas of the site where surface contamination of greater than 1 mg/kg PCBs remains after all excavation, treatment, and disposal is complete. Public access will be limited by installing and maintaining a six foot fence, or similiar structure.

Groundwater Monitoring

Ground water monitoring for PCBs and metals shall be conducted twice a year for the first two years of operation and may be reduced to annually thereafter with approval of EPA in consultation with Alaska Department of Environmental Conservation for a minimum of ten years. After ten years an assessment of the groundwater data will be conducted to determine whether groundwater monitoring is still required or whether the frequency will be altered.

Groundwater monitoring would be conducted to assess the effectiveness of the remedy for protecting groundwater. The groundwater standards that are to be achieved are the MCL and action level for PCBs and lead, 0.5 ug/L and 15 ug/L respectively.

Monitoring of groundwater down gradient of the landfill for PCBs (EPA method 8080), lead (EPA method 6000/7000), pH, specific conductance, and chlorinated organics (40 CFR § 761.75(b)(6)((iii)), or methods with equivalent detection limits and accuracy will be conducted to ensure the landfill is not contributing contamination to groundwater, nor altering groundwater conditions.

Stormwater Management

The site will be graded to prevent surface water discharges to Ship Creek. Site storm water structures will be designed to meet the requirements of 40 CFR § 761.75(b)(4)(ii), and constructed to prevent contaminated discharges of storm water to Ship Creek and prevent the transport of contaminated sediments off-site, including to Ship Creek.

Operation and Maintenance

The remedy will be operated and maintained for as long as the stabilized soils (landfill) remains on-site. Operation and maintenance of the remedy will include:

- Maintenance of the landfill to ensure that it retains its structural integrity and prevents release of PCBs and lead through any of the following mechanisms: erosion (including flood and seismic events), leaching, excavation;
- Maintenance of the rip rap erosion control wall along Ship Creek. The erosion control wall will be inspected once a year for the first five years and after flood and seismic events and extreme precipitation events defined as 24-hour, 25-year storms;
- Maintenance of a six foot (minimum) woven mesh fence, wall or similar device or other means to prevent unauthorized access to the site, if deemed necessary after remedial design.

10.0 STATUTORY DETERMINATIONS

The selected remedy satisfies the statutory requirements of Section 121 of CERCLA. The following sections discuss how the selected remedy meets these requirements.

10.1 Protective of Human Health and the Environment

The selected remedy is protective of human health and the environment. The existing exposure pathways will be eliminated by preventing inhalation, dermal contact, and ingestion of the COC's through treatment and containment. Site risks will be reduced to within the 1E-4 to 1E-6 risk range for carcinogens and the Hazard Indices will be less than 1.0 for non-carcinogens in an industrial land-use scenario. No unacceptable short-term risks or cross media impacts will be caused by implementation of the remedy. The

selected remedy is the best alternative for the site because it is cost effective, reliable, and allows future use of the site.

10.2 Applicable or Relevant and Appropriate Requirements

The selected remedy will comply with all ARARs and, based on the administrative record, justifies waiving certain TSCA landfill requirements as discussed in Section 9.1 above. The chemical-specific, action-specific, and location-specific applicable or relevant and appropriate requirements (ARARs) that will be attained are:

Clean Water Act, 33 U.S.C. § 1313 and 40 CFR § 131.36(d)(12) are applicable for preventing future releases to Ship Creek, establishes and implements the National Toxics Rule, and sets water quality standards for Alaska.

40 CFR § 141, Subpart B and F, the Safe Drinking Water Act Maximum Contaminant Levels are applicable and Maximum Contaminant Level Goals are relevant and appropriate, establishes cleanup standards for metals and organic compounds, including PCBs, in ground water.

Toxic Substances Control Act, 15 U.S.C. § 2601 et seq., and 40 CFR §§ 761.60 and 761.75(b), (except the waived requirements as described in section 9.0), is applicable for the on-site disposal of PCBs.

Clean Water Act, 33 U.S.C. § 1311, 40 CFR § 122.26 is applicable, direct discharges must meet technology-based standards, and storm water regulations for controlling discharges associated with industrial or construction activities.

Clean Water Act, 33 U.S.C. § 1314(b)(1) and 40 CFR Part 230, substantive requirements for dredge and fill requirements in waters of the United States is applicable for repairing the erosion control wall.

40 CFR § 261.24. RCRA Characteristic Hazardous Waste Determination is applicable for identifying soil and debris that must be managed as hazardous waste (i.e. lead).

40 CFR 264, Subpart C, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; Preparedness and Prevention is applicable for staging and conducting the remedial action.

40 CFR 264.310(a) RCRA Subtitle C Landfill regulation is relevant and appropriate for the cover design of the landfill, if appropriate.

40 CFR 268, RCRA Subparts C and D, Prohibitions on Land Disposal and Treatment Standards are applicable to the disposal of Characteristic and California List wastes, including contaminated debris.

Alaska Air Quality Regulations 18 AAC Chapter 50 for dust suppression and PCB emissions is applicable.

Executive Order 11988, 40 CFR 6, App. A, is applicable for action within floodplains, and to avoid adverse effects, minimize potential harm, restore and preserve natural and beneficial values.

Executive Order 11990 Protection of Wetlands is applicable for activities in wetlands or which could impact wetlands.

Off Site Disposal Rule 40 CFR 300.440 is applicable for disposing of contaminated materials off site.

To-Be-Considered (TBC) Guidances and Policies:

40 CFR Part 761, Subpart G, TSCA PCB Spill Cleanup Policy.

Guidance on Remedial Actions at Superfund Sites with PCB Contamination, OSWER Directive 9355.4-01.

10.3 Cost Effectiveness

The selected remedy affords overall effectiveness proportional to their costs. The selected remedy provides the best long-term permanence and risk reduction by treating the mobility of the COCs and preventing exposure via containment.

10.4 Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

EPA has determined, by utilizing the nine criteria of CERCLA, that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be used cost-effectively at the Standard Steel and Metals Salvage Yard Site. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined that the selected remedy provides the best balance in terms of long-term effectiveness and permanence; reduction in toxicity, mobility or volume achieved through treatment; short-term effectiveness; implementability; cost; and the statutory preference for treatment as a principle element and considering state and community acceptance.

The selected remedy will provide for permanent containment of the contaminants of concern. Greater protection could have been achieved by transporting the wastes off-site. However, because Alaska does not have chemical or hazardous waste treatment or disposal facilities, this option was deemed less implementable, too costly, and along with increased short-term risks, would not have reduced the risks substantially more than on-site treatment and containment.

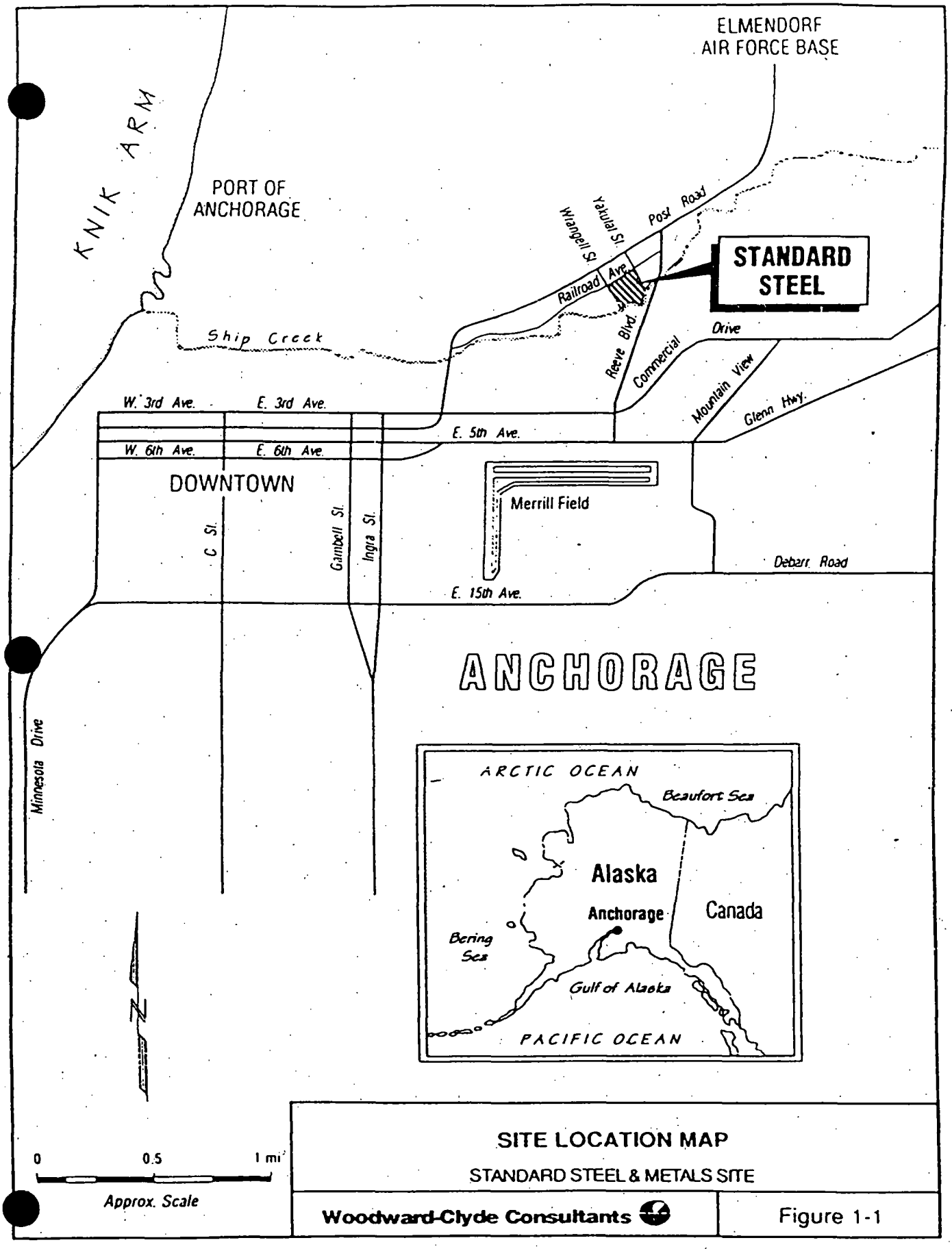
10.5 Preference for Treatment as a Principle Element

The preference for treatment is satisfied by the selected remedy because EPA's removal action treated the principle threats and additional treatment is being implemented. The treatment will immobilize lead and PCBs in soil as well as eliminate lead contaminated soils as a Characteristic Waste, pursuant to RCRA.

11.0 DOCUMENTATION OF SIGNIFICANT CHANGES

No significant changes to the proposed remedy, as presented to the public in the Proposed Plan have occurred. EPA altered Alternative 6, as presented in the feasibility study, in proposing its preferred alternative to the public. EPA determined that the subsurface cleanup standard should be 10 mg/kg for PCBs instead of 50 mg/kg. This alteration was deemed necessary to ensure future releases of hazardous substances from the site would not occur. The change is not anticipated to result in a significant change in estimated costs for the remedial action.

Additionally, the feasibility study and the Proposed Plan incorporated the Removal Action as a common element of the analysis of alternatives. The Removal Action included the construction of an erosion control wall along Ship Creek. In describing the selected remedy, EPA has more specifically included a requirement that the erosion control wall be repaired and maintained.

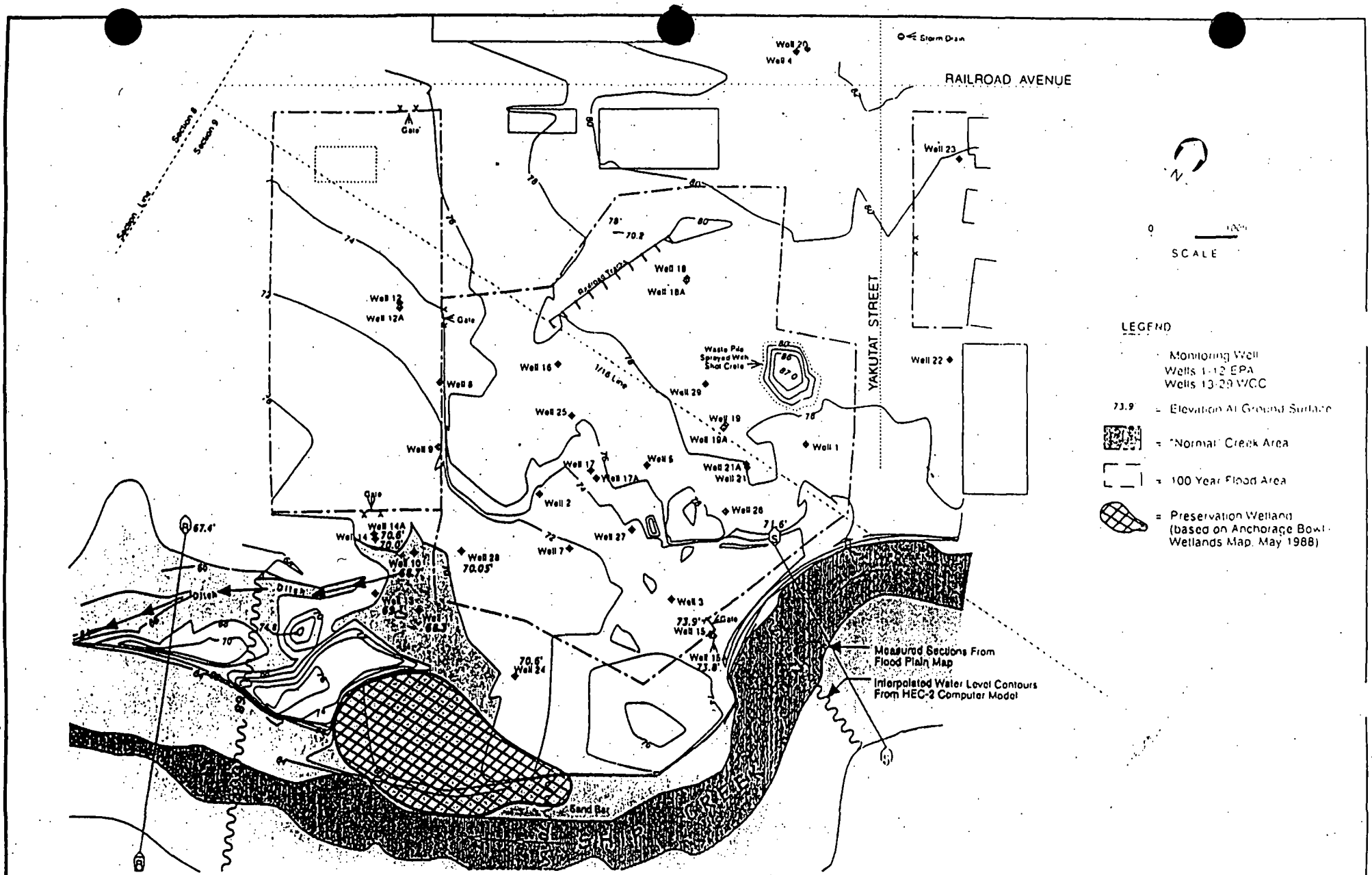


SITE LOCATION MAP

STANDARD STEEL & METALS SITE

Woodward-Clyde Consultants

Figure 1-1

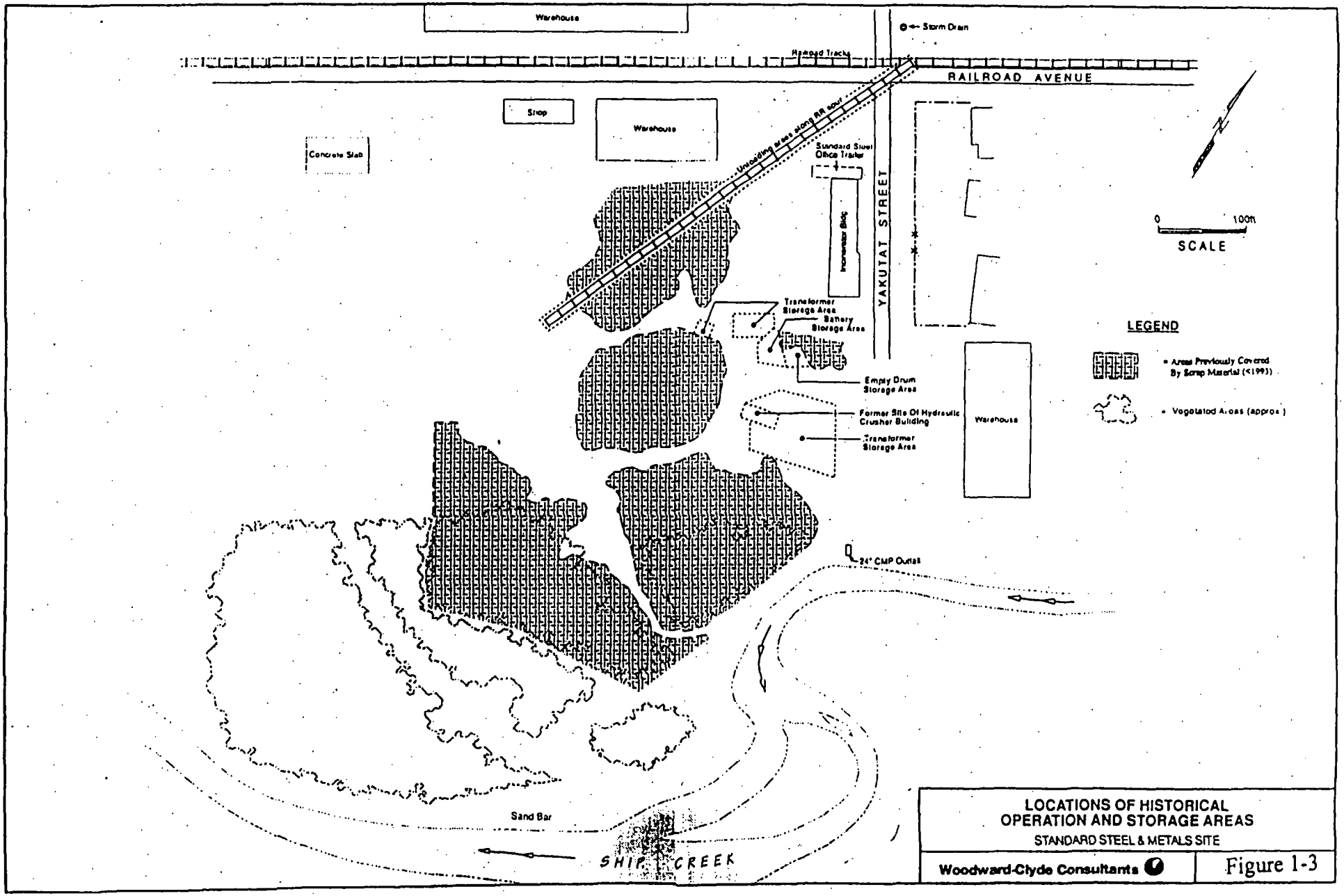


FLOOD PLAIN AND WETLANDS MAP

STANDARD STEEL & METALS SITE

Woodward-Clyde Consultants

Figure 1-2

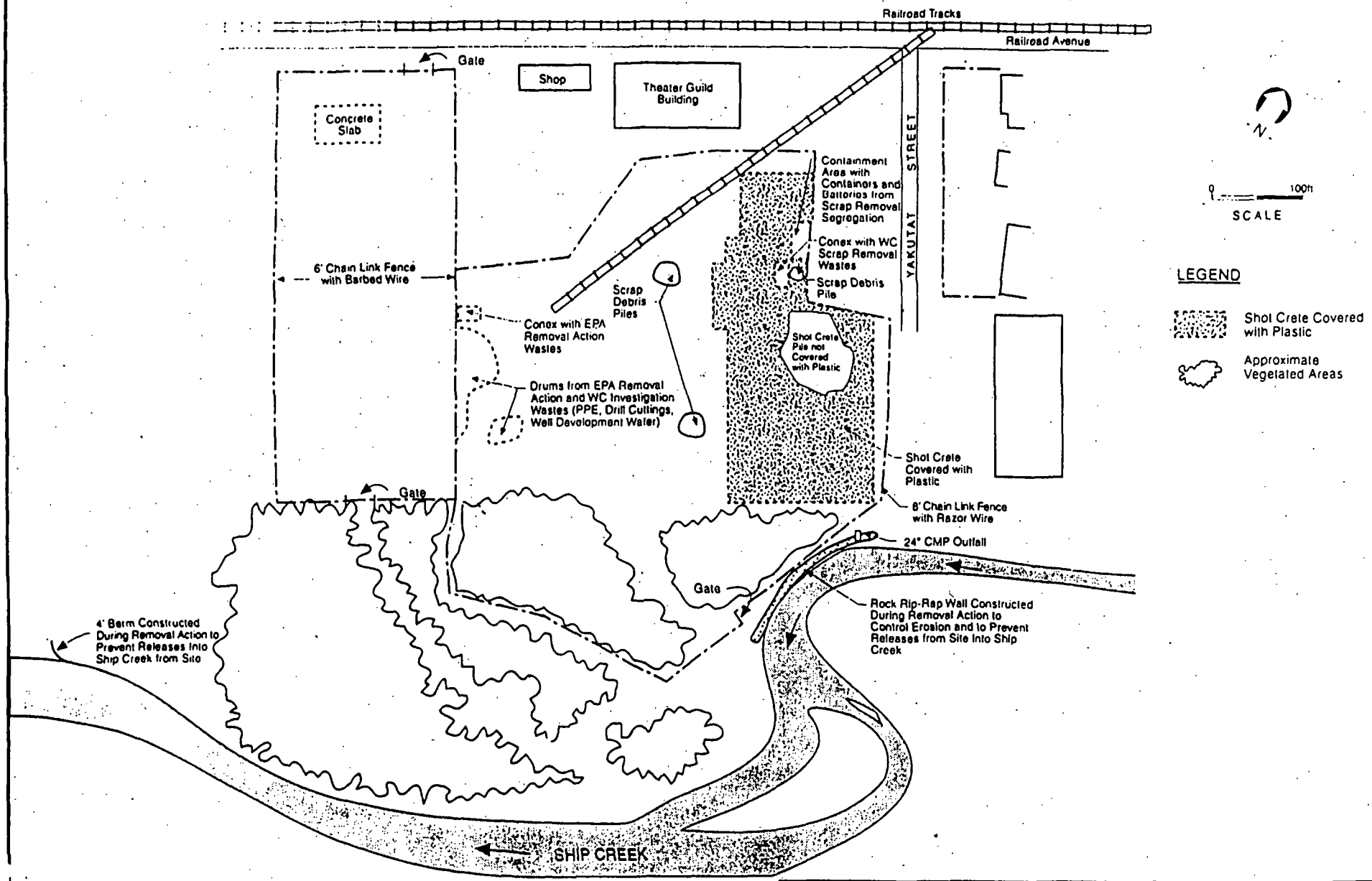


LOCATIONS OF HISTORICAL OPERATION AND STORAGE AREAS

STANDARD STEEL & METALS SITE

Woodward-Clyde Consultants

Figure 1-3



CURRENT SITE STATUS (POST-SCRAP REMOVAL)

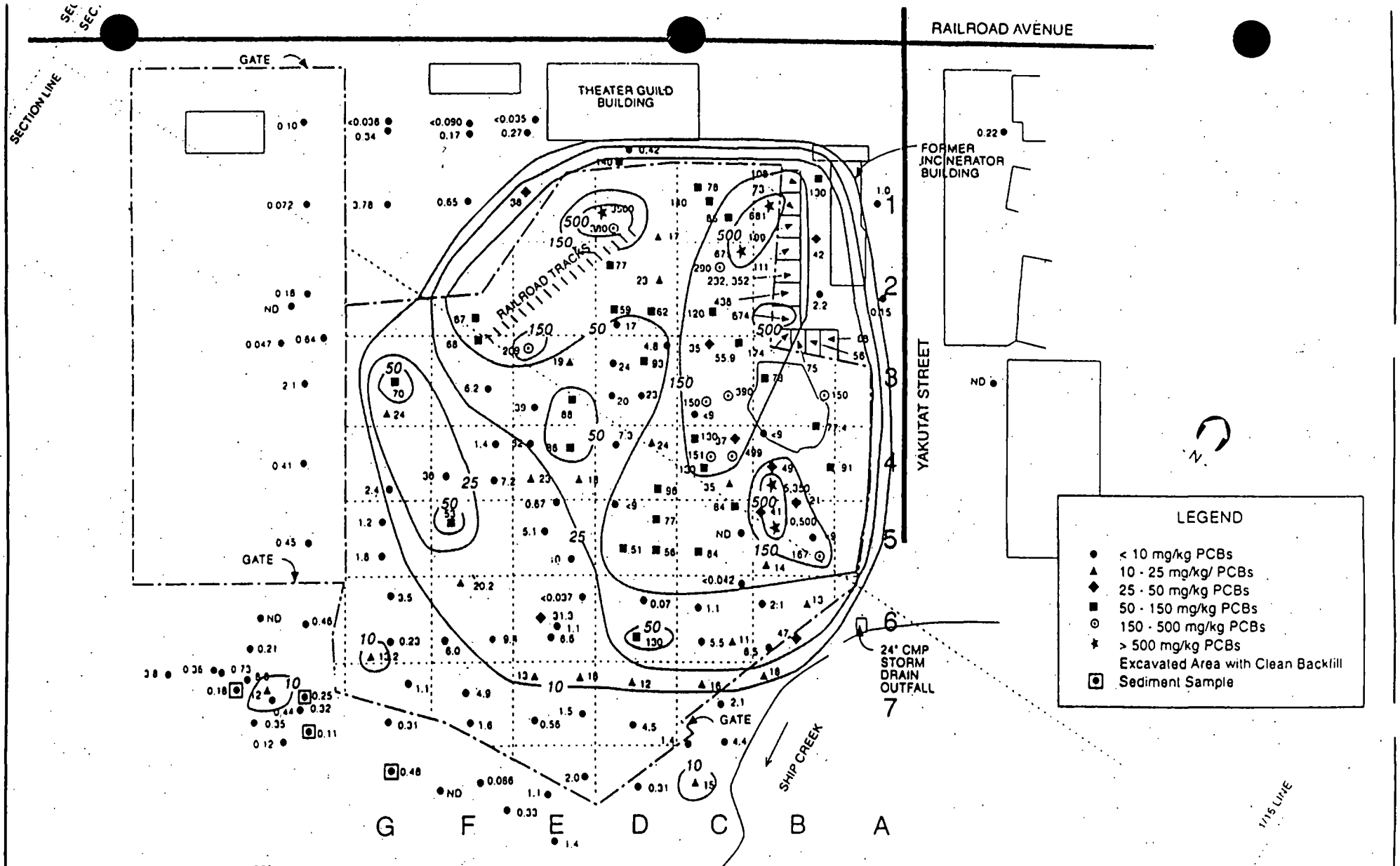
STANDARD STEEL & METALS SITE

Woodward-Clyde Consultants

Figure 1-4

Table 5-1
SUMMARY OF MEDIA AND CHEMICALS OF CONCERN

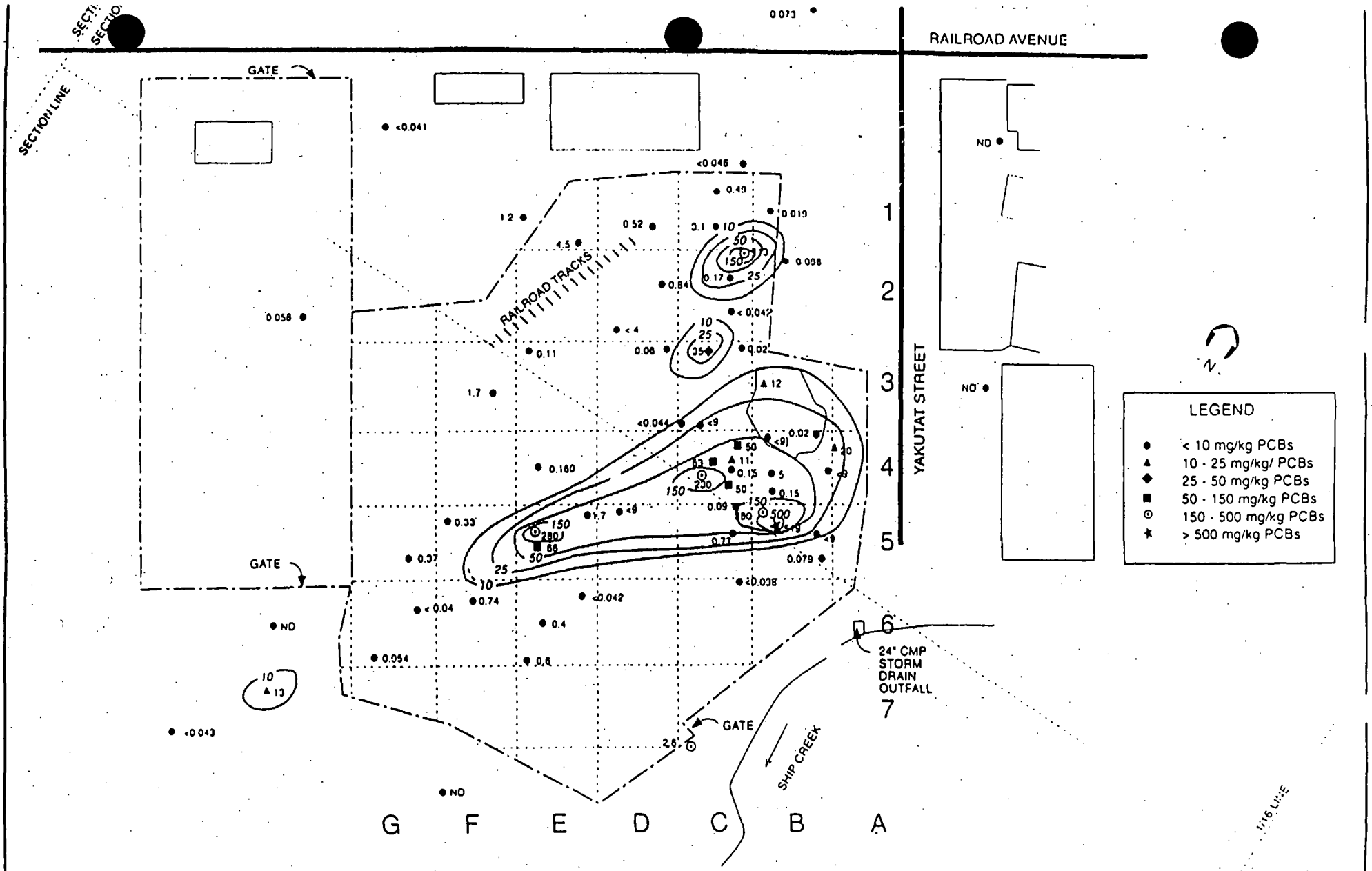
Media of Concern	Chemicals of Concern
Surface and Subsurface Soil	PCBs Lead Dioxins and Furans (co-located with PCBs)



CONCENTRATION OF PCBs IN SURFACE SOIL
STANDARD STEEL & METALS SITE

Woodward-Clyde Consultants

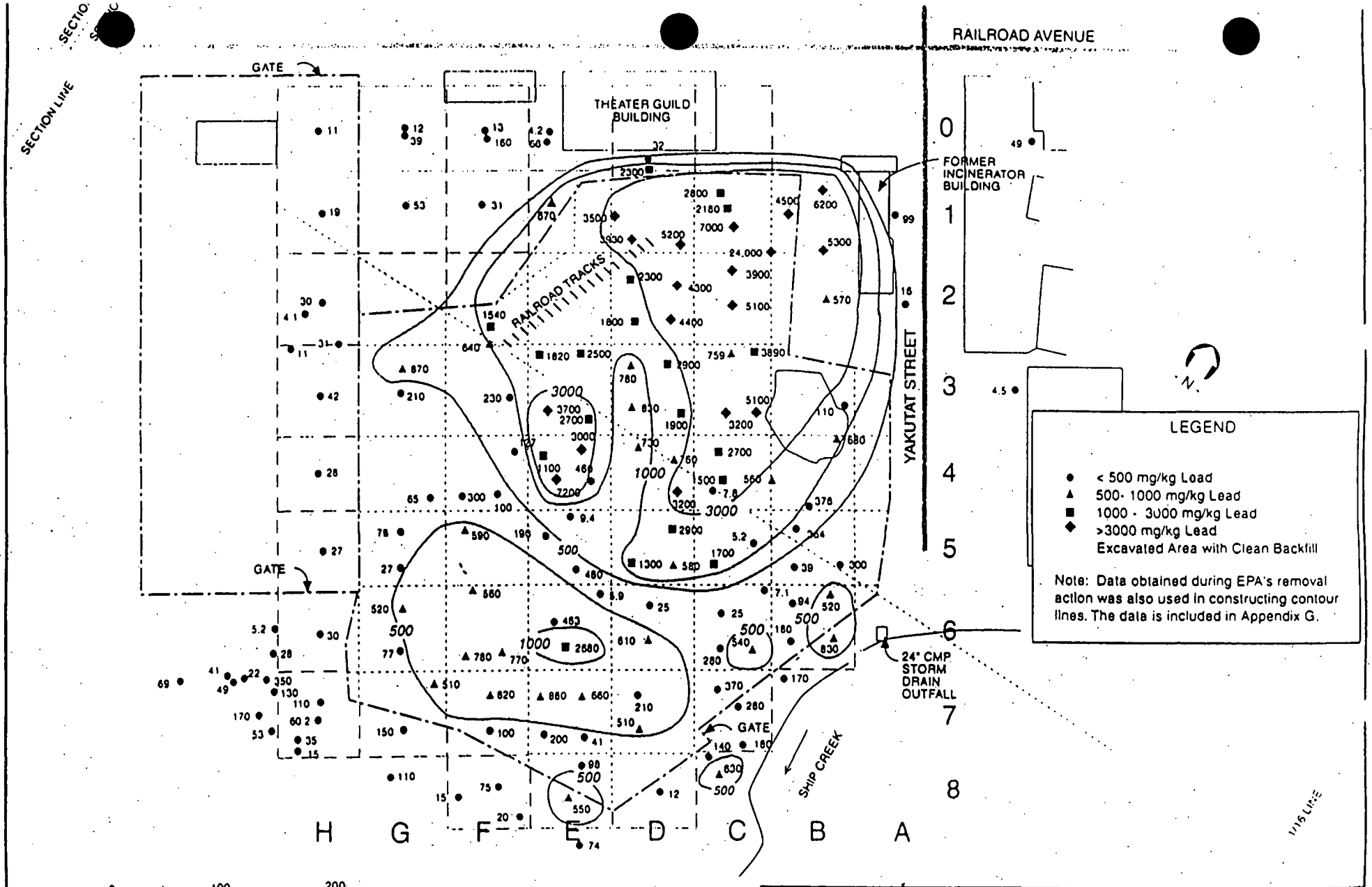
Figure 5-1



CONCENTRATION OF PCBs IN SOIL
WITHIN THE WATER TABLE ZONE
STANDARD STEEL & METALS SITE

Woodward-Clyde Consultants

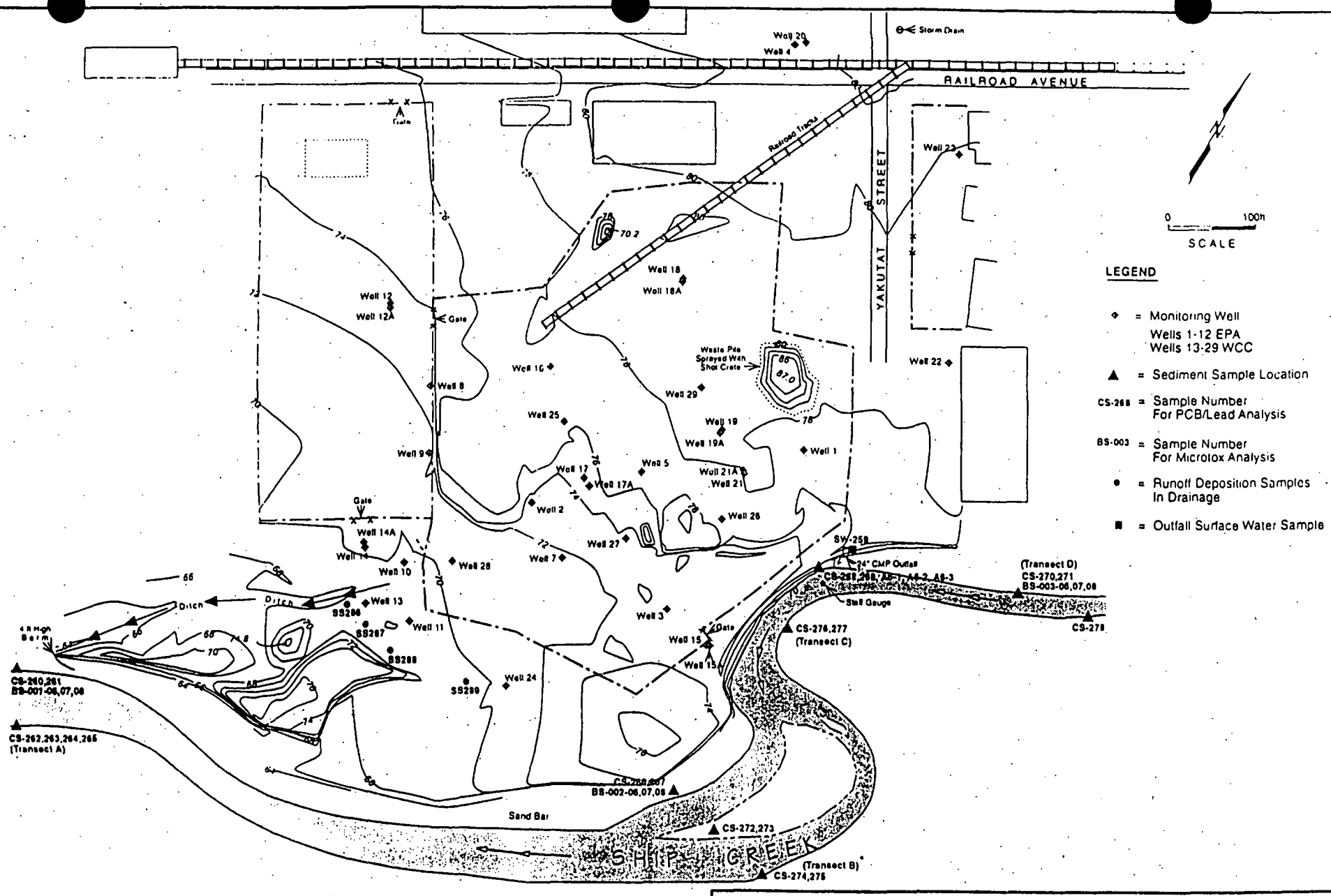
Figure 5-2



CONCENTRATION OF LEAD IN SURFACE SOIL
STANDARD STEEL & METALS SITE

Woodward-Clyde Consultants

Figure 5-3



MONITORING WELL AND SHIP CREEK SEDIMENT SAMPLING LOCATIONS

STANDARD STEEL & METALS SITE

Woodward-Clyde Consultants

Figure 5-4

Table 6-1
RESIDENTIAL RISK BASED CONCENTRATIONS, BACKGROUND CONCENTRATIONS, AND MAXIMUM CONCENTRATIONS OF PCOC'S IN SOILS AND GROUNDWATER

Chemical	Risk Based Concentration mg/kg in soil & mg/L in groundwater	Background Concentration[1] mg/kg in soil & mg/L in groundwater	Maximum Concentration[2] mg/kg in soil & mg/L in groundwater	Maximum Concentration (EPA Removal Action)[3] mg/kg in soil & mg/L in groundwater
SOIL				
PCBs	0.008	NA	380	10,600
Chrysene	0.009	NA	7.8	NA
Benzo(b)fluoranthene	0.009	NA	4.9	NA
Benzo(k)fluoranthene	0.009	NA	1.6	NA
Benzo(a)pyrene	0.009	NA	3.8	NA
Indeno(1,2,3-c,d)pyrene	0.009	NA	2.5	NA
Dibenzo(a,h)anthracene	0.009	NA	0.68	NA
2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	0.0000004	NA	0.00172	NA
Cadmium	10	1.13	11.60	128
Chromium	136.7	19.80	151	1,570
Copper	1000	14.85	3,320	7,700
Lead	500	6.89	7,200	44,500
GROUNDWATER				
Tetrachloroethylene	0.002	NA	0.0075	0.043
1,2,4-Trichlorobenzene	0.002	NA	0.024	0.39
Arsenic	0.00005	0.010	0.0159	ND
Cadmium	0.02	0.0001	0.0291	ND
PCBs	0.00001	NA	0.000032	2.025
Lead	NA	0.047	0.0031 J	0.00076

(1) Background concentrations in soil from Standard Steel Human Health Risk Assessment Report. Background concentrations in groundwater from Elmendorf AFB OU-5 Report.

(2) For maximum concentrations in groundwater, Phases 1 and 2 (unfiltered and filtered samples) data are used for tetrachloroethylene and 1,2,4-trichlorobenzene. Phases 2 (unfiltered and filtered samples) and 3 data are used for maximum groundwater concentrations of metals and PCBs

(3) Maximum detection during EPA removal action investigations

NA - not available

ND - not detected

Table 6-2

PARAMETERS USED TO CALUCULATE RISK-BASED SCREENING CONCENTRATIONS

Media	Scenario/ Receptor	Exposure Route	Target Cancer Risk Level	Target Hazard Index	Parameter/Reasonable Maximum Exposure Values: Ingestion Rate	Exposure Frequency (days/year)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)
Soil	Residential/ Adult	Ingestion	1.00E-07	0.1	100 mg/day	350	24	70	25,550 (Carcinogen) 10,950 (Noncarcinogen)
	Residential/ Child	Ingestion	1.00E-07	0.1	200 mg/day	350	6	15	25,550 (Carcinogen) 10,950 (Noncarcinogen)
Groundwater	Residential/ Adult	Ingestion	1.00E-06	0.1	2 L/day	350	30	70	25,550 (Carcinogen) 10,950 (Noncarcinogen)

Table 6-3

SUMMARIES OF RME HAZARD INDICES

Exposure Pathway	Short-Term Worker			Long-Term Worker			Resident		
	AOC 1	AOC 2	AOC 3	AOC 1	AOC 2	AOC 3	AOC 1[a]	AOC 2[b]	AOC 3
Soil Ingestion	1.8	1	0.3	1.4	0.1	0.3	10.6	1	2
Soil Dermal Contact	1.3	0.8	0.2	3.9	0.5	0.7	8.5	1.1	1.6
Particulate Inhalation	2E-5	4E-6	4E-6	NA	NA	NA	NA	NA	NA
Groundwater Ingestion	NA	NA	NA	NA	NA	NA	0.6	1.6	NA
Groundwater Dermal Contact	NA	NA	NA	NA	NA	NA	0.03	0.1	NA
Inhalation of Volatile Organic Compounds During Showering	NA	NA	NA	NA	NA	NA	0.01	NA	NA
Total Hazard Indices	3.1	1.8	0.5	5.3	0.6	1	19.7	3.8	3.6

NA Not applicable

[a] Includes hazard indices attributed to MW-21 groundwater exposure pathways

[b] Includes hazard indices attributed to MW-13 groundwater exposure pathways

Table 6-4

SUMMARIES OF RME EXCESS CANCER RISKS

Exposure Pathway	Short-Term Worker			Long-Term Worker			Resident		
	AOC 1	AOC 2	AOC 3	AOC 1	AOC 2	AOC 3	AOC 1[a]	AOC 2	AOC 3
Soil Ingestion	2E-5	9E-6	3E-6	3E-4	4E-5	5E-5	3E-3	3E-4	5E-4
Soil Dermal Contact	1E-5	6E-6	2E-6	8E-4	1E-4	1E-4	2E-3	3E-4	4E-4
Particulate Inhalation	1E-10	1E-10	4E-12	9E-8	7E-8	NA	1E-7	1E-7	NA
Groundwater Ingestion	NA	NA	NA	NA	NA	NA	1E-4[b]	NA	NA
Groundwater Dermal Contact	NA	NA	NA	NA	NA	NA	5E-6	NA	NA
Inhalation of Volatile Organic Compounds During Showering	NA	NA	NA	NA	NA	NA	7E-8	NA	NA
Total Excess Cancer Risk	**3E-5**	**1E-5**	**5E-6**	**1E-3**	**1E-4**	**1E-4**	**5E-3**	**6E-4**	**9E-4**

NA Not applicable

[a] Includes risks attributed to MW-21 groundwater exposure pathways

[b] Preliminary groundwater data for October 1993 reports PCB detections in MW-18 and MW-19 in the 3E-5 cancer risk range

Table 6-5

SUMMARY OF ESTIMATED EXCESS CANCER RISKS ASSOCIATED WITH 10mg/kg PCB CLEANUP LEVEL

Compound	PCBs	Dioxins and Furans	Total cPAHs	Cumulative
Concentration, mg/kg	10	0.00012[1]	0.25	--
Estimated RME risk: Long-term worker—combined dermal contact with ingestion[2]	3.0E-05	6.4E-06	5.8E-08[3]	3.6E-05

Notes:
(1) Expressed as 2,3,7,8-TCDD equivalent
(2) The procedure used to calculate risk is described in Appendix A
(3) Risk for cPAHs is ingestion only; EPA has not recommended absorption factors for dermal uptake of PAHs and states that further research is required on the bioavailability of PAHs in soil

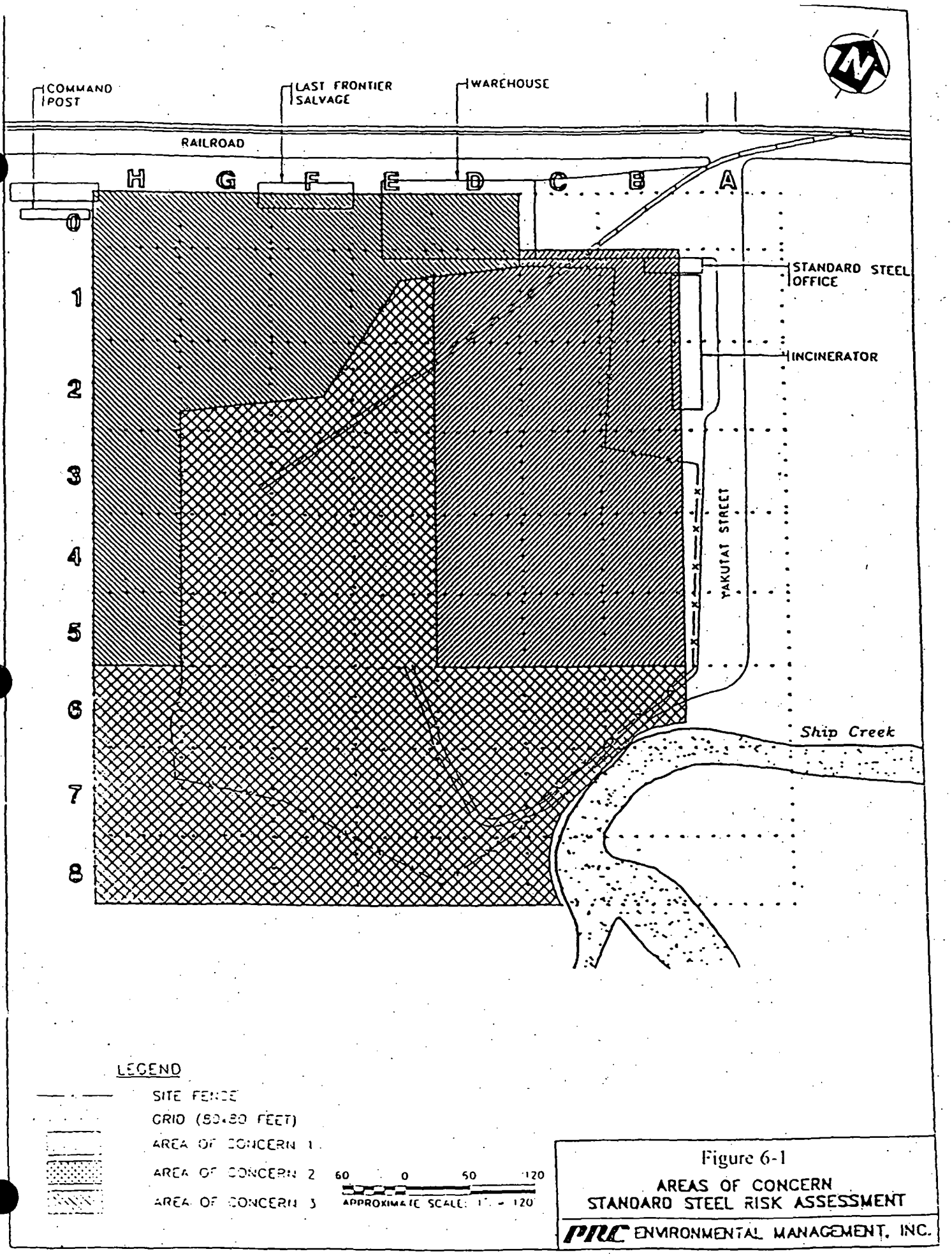
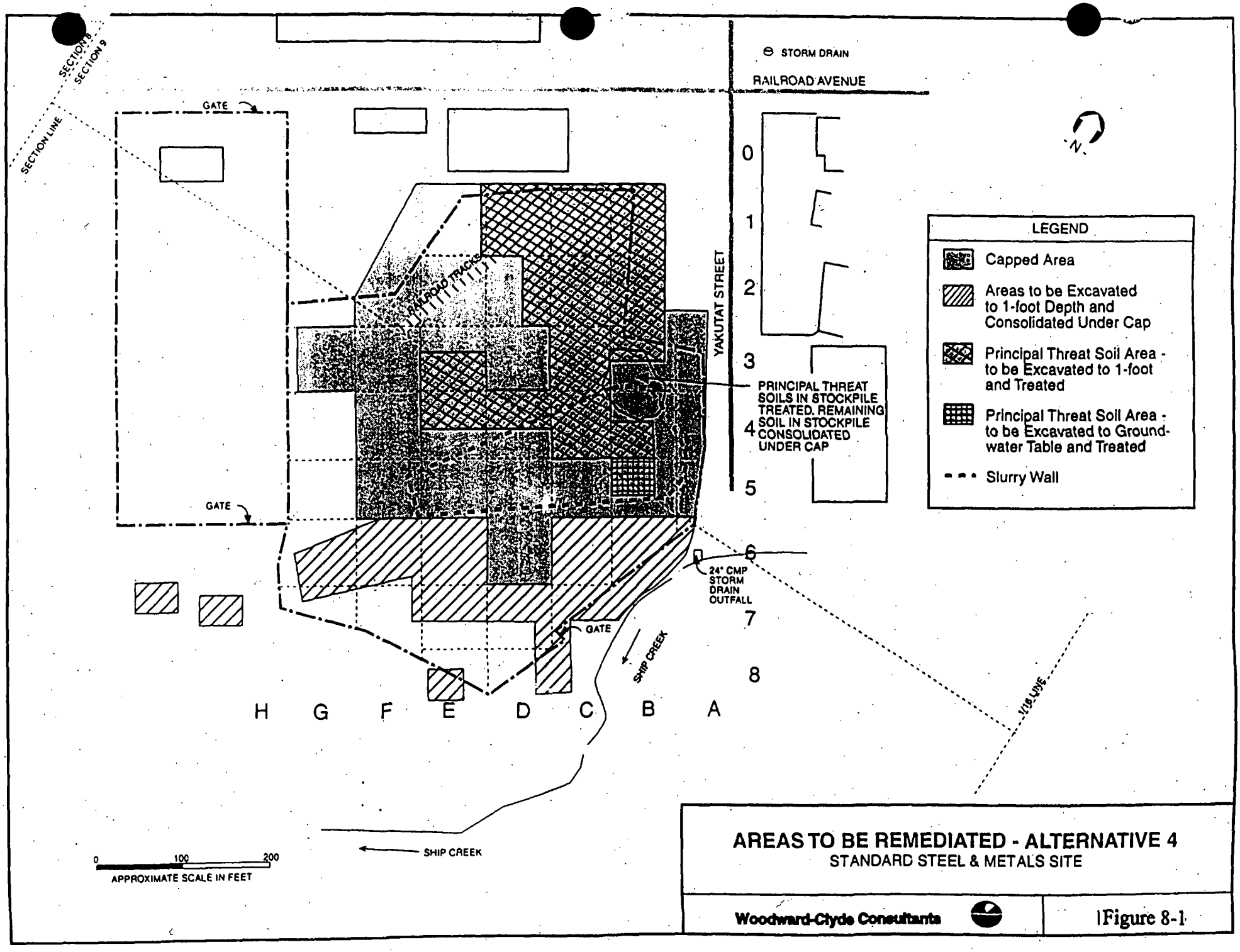


Figure 6-1

AREAS OF CONCERN
STANDARD STEEL RISK ASSESSMENT

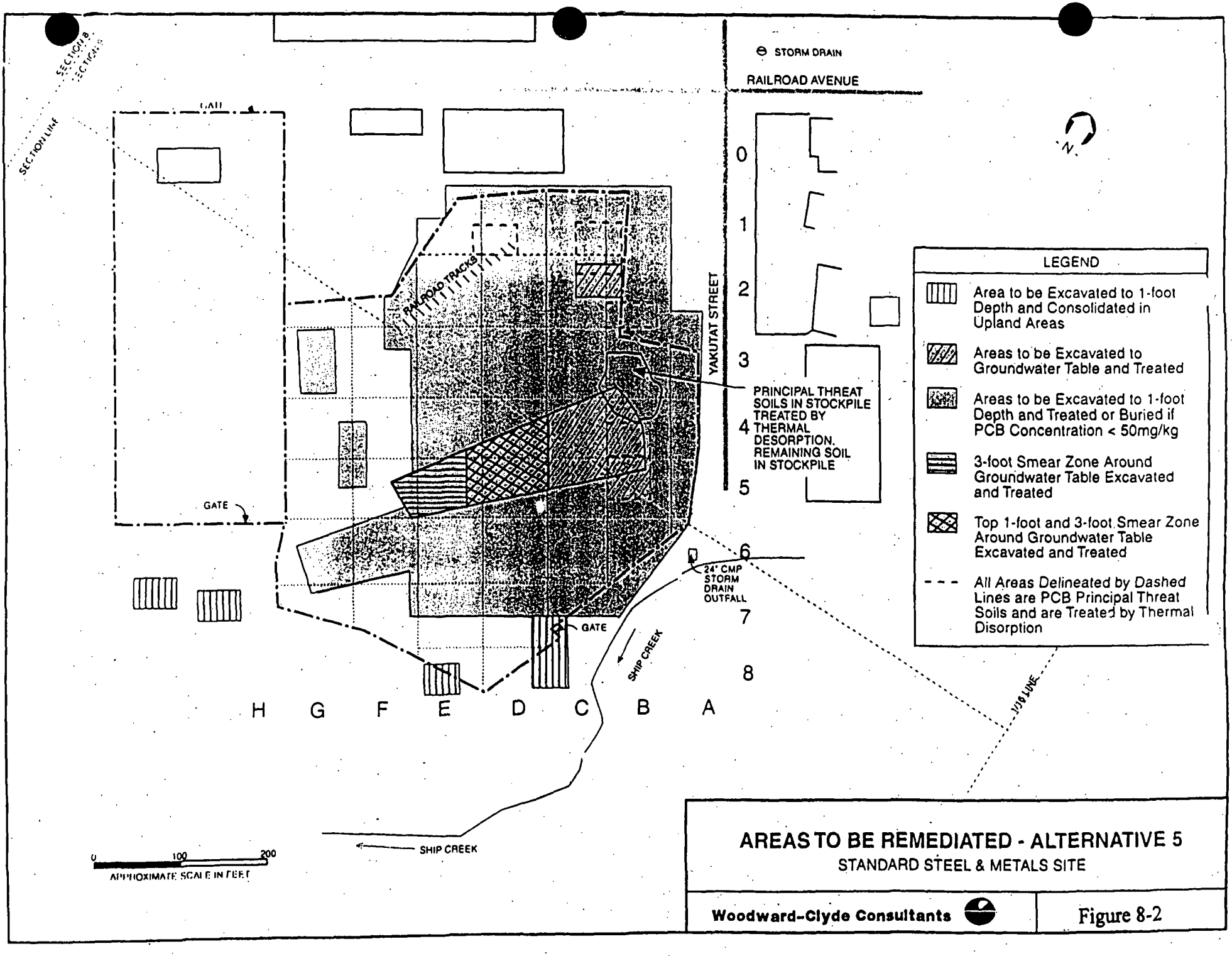
PRC ENVIRONMENTAL MANAGEMENT, INC.



AREAS TO BE REMEDIATED - ALTERNATIVE 4
STANDARD STEEL & METALS SITE

Woodward-Clyde Consultants

Figure 8-1

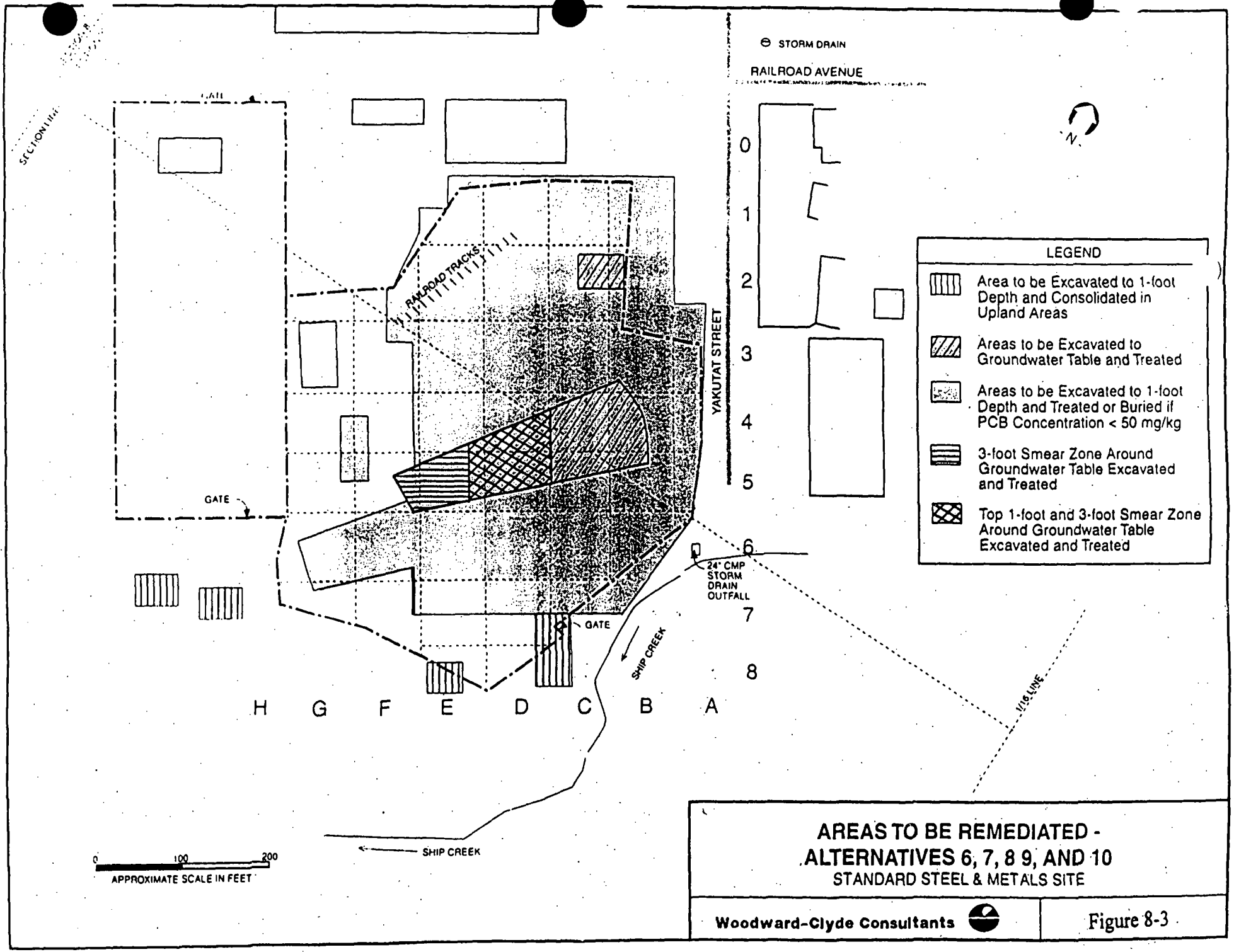


AREAS TO BE REMEDIATED - ALTERNATIVE 5

STANDARD STEEL & METALS SITE

Woodward-Clyde Consultants

Figure 8-2



AREAS TO BE REMEDIATED - ALTERNATIVES 6, 7, 8 9, AND 10
STANDARD STEEL & METALS SITE

Woodward-Clyde Consultants

Figure 8-3

Table 9-1

Soil Cleanup Level Summary

PCB (mg/kg)	Lead (mg/kg)	Action*
<1	<500	No Action
1-9.9	500-999	Flood plain soils only, excavate and consolidate elsewhere on-site
10-49	NA	Excavate and consolidate soils in onsite TSCA landfill below 1 foot of landfill surface
50 or greater	1000 or greater	Excavate soils and treat by solidification/stabilization, then dispose in a on-site TSCA landfill. Treated soils cannot be placed in top foot of landfill unless concentration is less than 10 mg/kg PCBs or within the groundwater fluctuation zone.

* Groundwater fluctuation zone will be backfilled with soils containing less than 1 mg/kg PCBs. All other excavated areas will be backfilled with soils containing less than 10 mg/kg PCBs. Soils may not be stockpiled, and subsequently backfilled, in a manner which reduces the concentrations below 10 mg/kg, or to avoid treatment.

RESPONSIVENESS SUMMARY
STANDARD STEEL AND METALS
SALVAGE YARD SITE

The purpose of this responsiveness summary is to summarize and respond to public comments submitted regarding the Proposed Plan for the remedy at the Standard Steel and Metals Salvage Yard site located in Anchorage, Alaska. The public comment period for the Proposed Plan was held from March 18, 1996 through April 17, 1996.

This responsiveness summary meets the requirements of Section 117 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA).

Four verbal comments were received during the April 10, 1996 public meeting held in Anchorage, Alaska. All four comments supported the selection of stabilization/solidification as a final remedy for the site.

Six written comments were received postmarked by April 17, 1996. These comments are listed and responded to in the following text. Similar comments have been combined and the text is paraphrased due to the length of comments. All comments are included in the Administrative Record.

Two comments were received after the end of the public comment period. These comments are very similar and reflect the same concerns as those submitted by Greenpeace and the Anchorage Waterways Council. EPA will address these comments in this responsiveness summary.

Comment 1: Chugach Electric Association commented on EPA's alteration of the PCB subsurface soil cleanup level from 50 mg/kg to 10 mg/kg. Chugach commented that there was insufficient notice about the change because it was not evaluated in the feasibility study. Chugach also commented that it is concerned that EPA's proposed alteration of Alternative 6 may invalidate the results of the FS. Of particular concern to Chugach is the effect on the cost of implementing the additional excavation. Chugach also notes that there is little legal basis for selecting a 10 ppm cleanup level. Chugach mentioned that if EPA limits the extent of this alteration to the three known areas of subsurface PCB contamination that their above concerns "will not be triggered". Chugach also stated that they look forward to working with EPA on implementing the remedy.

Response: In the Proposed Plan EPA presented the preferred alternative to the public with a 10 mg/kg cleanup level for both surface and subsurface soils, instead of a 10 mg/kg surface and 50 mg/kg subsurface cleanup level, as presented in the FS. The change from the FS was

identified and explained in the Proposed Plan and during the public meeting. EPA supplied sufficient notice to the public and informed them of why the change was proposed. No other comments were received objecting to the proposed subsurface cleanup standard.

Chugach's concern with the alteration of the price is warranted and EPA did consider it in proposing the alteration from the FS. In EPA's judgment, the change in volume to be excavated will not have a significant impact on actual costs of implementing the remedy. Since soils between 10ppm and 50ppm are only required to be consolidated in the TSCA landfill, as is proposed with surface soils, and not treated with stabilization the only impact will be on costs of excavating and backfilling. The cost of excavating soils is estimated (FS estimates) at $25.00/cy and backfilling and compaction at $8.00/cy. The cost of increasing subsurface excavations by 1000 cy is estimated at $33,000. Even with an additional 3000 cy of subsurface soils requiring excavation the increase in cost will be less than $100,000, which is approximately 2% of the low-end estimation of the preferred alternative. Additionally, the small increase in costs resulting from additional excavation and backfilling would be less than the costs of monitoring and maintenance of the cap that would have been required over areas of the site that would have had 50 mg/kg in the subsurface.

Chugach's comment about the legal basis of selecting a 10 mg/kg cleanup level is noted. There is no federal or state ARAR that sets PCB soil cleanup levels. The cleanup levels at this site were based on residual risk, long-term protection, and consideration of cleanup standards contained in the TSCA Spill Policy and Superfund PCB Guidance and policies. Although the TSCA Spill Policy may not require 10 mg/kg beyond 10 inches, EPA has the discretion to select a more stringent cleanup level. We selected 10 mg/kg as the cleanup level for PCBs because commercial activities on the site and the nature of the climate in Anchorage cast doubt on the effectiveness of a one foot soil layer over soils containing 50 mg/kg at depth. EPA decided that either a substantial cap (asphalt, geomembrane) would be needed to prevent exposure to soils with up to 50 mg/kg PCBs, or an alternative was to excavate soils above the surface soil cleanup level and contain with other soils exceeding the cleanup level. Containing moderately contaminated soils with the treated soils was determined to be more cost effective and practical than capping most of the site and maintaining that cap forever.

Regarding the extent of subsurface soil excavations above 10 mg/kg PCBs. EPA anticipates, based on current data, that these areas are limited to four locations on-site. EPA's alteration is based on the need to prevent future releases from the site. Considering that subsurface characterization is limited and additional sampling may determine significant areas of subsurface contamination beyond the three areas identified in the RI/FS, EPA can not put a limit on the need for addressing these soils. However, EPA will reevaluate the remedy if very significant areas of subsurface contamination are discovered that would greatly increase volumes to be excavated and contained. In that event, EPA will work with the participating parties conducting the remedial action and the community to address these soils in a protective manner.

Comment 2: Anchorage Waterways Council (AWC) submitted substantial comments regarding

the lack of information on current stream bed conditions and hydraulic characteristics of Ship Creek in the Administrative Record. AWC does not support stabilization/solidification as the remedy at the site and can "concur only with options 9 or 10. Main points raised by AWC are listed below.

1) Degree of aggradation of Ship Creek, a study is needed to quantify and qualify the degree of aggradation.

2) Ship Creek has been channelized in some locations upstream of the site and significant urbanization may significantly alter the slug flow and flooding characteristics of Ship Creek.

3) Dams located upstream may significantly affect the stream bed condition, gradient, and elevation. AWC states that " There appears to be a significant chance of catastrophic failure of one or both of the fish hatchery dams during a flooding event." This could significantly alter the stream bed.

4) The Standard Steel site is located in an area which "will almost certainly be inundated by a 100, 500 or 1000 year flood event, just as it was in the flood of August 1989." AWC raised concerns of changes in global weather patterns and that flooding and inundation will be more frequent.

5) EPA's evaluation of remedial options may contain errors regarding which options achieve long-term permanence and that alternatives 2, 3, 5, and 6 must be included in the category of alternatives which could be effected by catastrophic events.

6) EPA's evaluation fails to adequately consider the economic and health aspects of the release of site contaminants to Ship Creek.

7) AWC recommends EPA perform an analysis of potential economic and health effects of a release of contamination from this site. Also, that leaving these wastes on-site is in effect leaving an "environmental timebomb".

Response to points 1) ,2), 3), 4) and 5): As part of Remedial Design a study of flooding potential in the Ship Creek basin will be required. This study will evaluate the impacts of a 100 and 500 event on the site. The landfill and solidification mix will be designed to resist at a minimum a 100-year flood event in accordance with TSCA landfill requirements. It should be noted that there are common engineering solutions to designing structures in flood plains. The fact that the structure contains PCBs and lead does not prevent the structure from being designed to withstand flooding, erosion or seismic events.

The stabilized mass will immobilize the waste and not allow PCBs or lead to be released

from the site. The solidified wastes and groundwater will be monitored. If monitoring shows releases of hazardous substances above drinking water standards or site cleanup levels, such releases will be addressed. It should be noted that significant transport of contaminated soils did not occur after the August 1989 flood event. This is supported by sampling data from the EPA removal actions and comparison to RI/FS sampling. The landfill will not be placed within the 100 year flood plain.

The erosion control bank along the site's border and Ship Creek will be repaired and, if necessary, improved. This erosion control structure will be maintained as long as the landfill exists.

Response to point No. 6: Concerning Long-term effectiveness and permanence, EPA stated in the Proposed Plan (March 18, 1996) that

> "Alternative 4 would require maintenance of a cap and containment measures forever, and therefore receives a low rating. Alternatives 5,6,8,9, and 10 would all have a high long term reliability because the contaminants would either be removed from the site or solidified. Although the containment cell would require monitoring, there is sufficient experience with solidification to predict that it would be reliable over time. Alternative 7 would remove most (90%) of PCBs, but would not provide as significant on-site controls (constructed mechanisms) to prevent long term releases as Alternative 6. Potential releases from Alternatives 4 and 7 would be caused by very significant site disturbances, such as earthquakes, flooding, or failure of land use controls."

EPA does not disagree with AWQ's position that "Any" waste left on-site could (EPA emphasis added) be affected by catastrophic events or improper application of land use controls. However, CERCLA states that EPA is to evaluate risk based on reasonable land use scenarios and base remedies on reasonable assumptions. Flood and seismic events can be anticipated and the landfill designed to minimize releases associated with such events. All potential effects from global warming, acts of God, or war cannot be anticipated. EPA considers the evaluation presented in the Proposed Plan as an accurate evaluation of which alternatives comply with the criteria of long-term protection and effectiveness, and that our assumptions and remedy is reasonable.

Response to point No. 7: EPA has evaluated effects of releases from the site and has determined that there are no current releases from the site. We have also determined that by implementing this remedy future releases will be highly unlikely. EPA strongly disagrees with the statement that the wastes at this site are in effect an environmental timebomb. Neither PCBs or lead are mobile in water, substantial actions have been undertaken which have eliminated risks posed by the principle threats at the site (PCB oils), and on-site containment versus offsite containment or treatment poses fewer risks due to transportation. Exposure through other pathways, such as direct contact, inhalation, ingestion will be eliminated by solidification.

Comment 3 and 4: Greenpeace and Bob French submitted the following comments (comments were separate but similar enough to address together):

1) EPA stated the life expectancy of the monolith is approximately 30 years. The commenters concern is that the short life expectancy is too short to ensure protection of environmental and human health. The commenter also states that this technology is untested in subarctic environments and that a GAO report states that EPA officials believe that technologies must be used multiple times under a variety of conditions before their cost and performance data become reliable and acceptable for cleanup decisions.

2) EPA has minimized the severity of pollution problems ensuing from the creek and that a DEC Site Summary for Standard Steel stated groundwater was contaminated with PCBs, lead, and tetrachloroethylene (not addressed in the Proposed Plan) and that sediments in Ship Creek are contaminated with PCBs. The commenter feels the scope of the investigation was too limited to address impacts to offsite drinking water sources and bioaccumulation of persistent organochlorine contaminants downstream from the site.

3) EPA has not adequately considered the endocrine disruption potential for the organochlorine chemicals in wildlife and humans. EPA has not fully discussed the fate of dioxin/furan contaminated ash, and that the containers with the dioxin/furans are not secured.

4) Greenpeace feels that with "the serious uncertainties and lack of proven technology regarding the proposed remedy, the best solution to the problem is Alternative 9- Offsite disposal.

Responses:

1) EPA stated during the public meeting that the "life expectance is at least thirty years. We say it could go on indefinitely." Stabilization (cement/concrete) technology has been employed for thousands of years and has a long history of data to draw from. The design of the containment cell will be for hundreds of years, and Institutional Controls will be required to ensure the remedy is maintained and changes in land use do not pose an unacceptable risk to human health or the environment.

Regarding the GAO report, without knowing the report referred to and its context, EPA cannot directly respond to that statement. EPA has a national policy to promote the use of innovative technologies when they have a reasonable chance of providing a cost effective, efficient, and reliable treatment solution. Stabilization/solidification has been used at other Superfund cleanups, and EPA has proposed stabilization/solidification as an alternative remedial alternative for PCBs under the Toxic Substances Control Act, Resource Conservation and Recover Act and the Comprehensive Environmental Response, Compensation and Liability Act.

EPA acknowledges the challenge of implementing this remedy in a subarctic environment. However, solidification has been implemented successfully at many Superfund Sites in the lower forty eight states which have similar climatic conditions as Anchorage, Alaska.

2) Both EPA and DEC were involved in the scoping of the RI/FS and concurred on the scope of the RI/FS investigation. EPA maintains that groundwater is not contaminated at levels which require remediation. The tetrachloroethylene contamination the commenter is referring to was located onsite and only in one well. This does not constitute a situation requiring remediation of groundwater, nor does it necessitate a different remedial alternative. The selected remedy includes monitoring of groundwater to ensure that there is no migration of contaminants off-site.

Ship Creek was evaluated by EPA, with the input by DEC and a Biological Technical Advisory Committee consisting of the U.S. Fish and Wildlife Service, Alaska Department of Fish and Game, Elmendorf AFB Natural Resource Trustee. This group concurred with the conclusion that the Standard Steel site is not currently releasing contaminants to Ship Creek. Ship Creek is a heavily impacted waterway by many point and non-point sources. There have been other PCB spills adjacent to the creek and some directly into the creek as well as urban runoff, storm sewers and other unknown sources. It was decided during scoping that correlating past releases from the Standard Steel site to Ship Creek was impractical.

3) EPA did evaluate the impacts of dioxin/furans in the Baseline Risk Assessment. The assessment determined that dioxins/furans do pose a risk. EPA is taking action to mitigate these risks by stabilizing/solidifying all soils containing dioxins/furans. These soils are collocated with PCB soils requiring excavation and treatment.

The dioxin/furan contaminated equipment is secured on site in a locked shipping container. This container is within the fence boundary and located on private property maintained by the Alaska Railroad Corporation. Ash from the incinerator was placed in the shipping container with the incinerator equipment. The equipment and ash will be properly disposed off-site as part of the selected remedy.

4) EPA feels the uncertainty related to the effectiveness and reliability of stabilization/solidification is low and that remedial design will result in a protective long-term solution for the site. EPA feels that shipping large volumes of soils from Anchorage Alaska to a disposal facility in the lower forty eight states poses greater short-term risks, does not alter the long-term risks and would simply transfer the waste to another location at a substantial cost.

Comment 5: The Municipality of Anchorage submitted a comment concerning erosion by Ship Creek along the bank of the site. The commenter does not oppose the proposed alternative in

concept.

Response: The remedy will require an assessment of Ship Creek erosion potential and mitigation requirements. The remedy will include maintenance of the erosion control structure along the site bank.

Comment 6: Sears Roebuck and Co commented that the proposed plan for remediation of the site represents an effective and pragmatic approach to remediating the subject site. However, the commenter has concerns with the selected 1000 mg/kg treatment level for lead. The commenter feels it is "excessively conservative". The commenter provided an Attachment entitled "Calculation of Lead PRG Using Bowers Et. Al. (1994) Model" This calculation results in a PRG of 7,850 mg/kg lead in soil.

Response: EPA appreciates that the commenter supports the proposed remedy. The treatment level for lead is not solely driven by risk alone. Pursuant to the Resource Conservation Recovery Act, the lead present in soils at the site is considered a characteristic RCRA hazardous waste (waste code D008) when generated (excavated). Pursuant to RCRA Land Disposal Restrictions characteristic wastes must be treated prior to land disposal or obtain at Treatability Variance. Soils at the site failed the characteristic test (SW-846, TCLP) of leaching greater than 5.0mg/kg lead when the soil concentrations was as low as 780mg/kg (Table 2-10 of FS). It was shown in the soil treatability tests that soils above 1700mg/kg lead would consistently fail the characteristic test and would be considered Hazardous Waste.

Since soils exceeding 10 mg/kg PCBs will be excavated and placed in the TSCA landfill and these soils have greater the than 1000mg/kg lead, the presence of lead forces treatment of these materials prior to land disposal.

The 1000 mg/kg cleanup level has been utilized at many other Superfund sites with an industrial land use. This level is considered protective by EPA in these circumstances. As EPA and the commenter noted an acceptable method of quantitatively evaluating the risk posed by lead to adults at industrial sites is unavailable. The Bowers Et. Al. (1994) model is being evaluated by EPA for general application in the Superfund program. However, the model has not yet been generally accepted in Superfund guidance and it was not being considered at the time the Baseline Risk Assessment was completed for this Site.

EPA utilizes the Baseline Risk Assessment to determine whether an evaluation of remedial alternatives is warranted at a site. EPA does re-evaluate risks when new information becomes available. However, unless that new information demonstrates that a significant change (either greater or lesser risk) in risk from the previous risk assessment would occur, EPA does not consider it necessary to delay cleanup and incur additional cost to revise the risk assessment or reassess alternatives.

EPA (Mark Maddaloni, EPA Lead Evaluation Workgroup, chair of the sub-committee for

non-residential exposure) did a limited evaluation of the analysis Sears submitted using the Bowers Et. Al. (1994) model and disagrees with two default assumptions used by Sear's consultant. First and foremost, EPA cannot support adjustment of the frequency of contact (FOC) to account for EPA's default industrial exposure duration divided by a lifetime (i.e., 25 years / 70 years). An elevated blood Pb level will reflect current exposure conditions and has nothing to do with the how long people tend to live. Rather than integrate the blood lead level over a lifetime, EPA is interested in exposure durations that could be limited to nine months - that duration representing the gestational period in which lead would be transferred from mother to fetus. Second, bioavailability is an issue. The value used by Sears (8%) represents a lower bound estimate in that it reflects conditions where bioavailability was measured during a fed rather than fasted state. Absorption is much greater when lead is introduced to an empty stomach. A default value employed at the Leadville Superfund Site of 12% would be recommended.

The Bowers Et. Al. (1994) model may be an appropriate tool for evaluating lead risks at non-residential sites. However, EPA does not think it would be in the best interests of the community, or the site to delay cleanup and conduct another evaluation of risks at the site, when the outcome would not likely be a significant change in cleanup level or cleanup costs. EPA considers a 1000 mg/kg cleanup level for lead appropriate at the site based on a qualitative evaluation of lead risks, previous remedial action levels at other Superfund sites, and the collocation of lead and PCBs at the site.

It would be very expensive and delay cleanup to conduct TCLP tests on all soils prior to treatment to determine whether they fail the TCLP test, and it is impractical to separate the lead contaminated soils from the PCB soils. Therefore EPA will retain the 1000mg/kg treatment level for lead contaminated soils.

Late Comments: Two comments were received from the Sierra Club, Alaska Chapter and the Downtown (Anchorage) Community Council. There concerns are that EPA does not have enough information for selecting stabilization/solidification as a final remedy and groundwater and Ship Creek Sediments are contaminated and need to be addressed. They submitted similar concerns as the above comments regarding flooding and seismic events.

Response: EPA believes there is sufficient information to assess stabilization/solidification. Treatability tests have been conducted on site soils and have determined that s/s is effective at binding the wastes in a monolith. Further testing will be conducted to determine how to address freeze/thaw process. If these tests determine that the monolith can not be constructed to withstand freeze/thaw process and maintain its goal of preventing exposure and release of the contaminants then an alternative remedy will need to be selected.

EPA does not concur that groundwater and sediments in Ship Creek require remedial action to address contamination. The data within the RI and the Risk Assessment clearly illustrate that groundwater does not pose an unacceptable risk to human health or the environment. The LNAPL is a high risk material, but is considered to be a "source" to potential

groundwater contamination and not considered to be groundwater. The LNAPL and LNAPL contaminated soils will be excavated and treated as part of the selected remedy. RI data on Ship Creek sediments show no PCB contamination is not present in sediment adjacent to the site which pose an unacceptable risk to human health or the environment and therefore does not require remedial action. Stream sediment samples adjacent to the site and downgradient did not detect PCB or lead contamination which demonstrated a release from the site. These samples were obtained in depositional areas and would indicate whether there have been recent releases. Past releases may have occurred but would be distinguishable, if detected, from non-site releases.

Flooding and seismic events will be addressed during design of the monolith. These are common engineering restraints which any activity within the Ship Creek basin and throughout most of Anchorage would have to accommodate.

STANDARD STEEL AND METALS SALVAGE YARD
ANCHORAGE, ALASKA

RECORD OF DECISION

		CONCURRENCE		
INITIALS:	LLH w/changes			
SURNAME:	L. Houck	E. Kowalski	J. Fox	
DATE:	7/2	7/9/96		

STANDARD STEEL AND METALS SALVAGE YARD
ANCHORAGE, ALASKA

RECORD OF DECISION

		CONCURRENCE		
INITIALS:	CC	CK	MG	
SURNAME:	C. Cora	C. Krueger	M. Gearheard	
DATE:	6/28	7/11/96	7-15-96	

STATEMENT OF WORK

REMEDIAL DESIGN AND REMEDIAL ACTION, STANDARD STEEL AND METALS SALVAGE YARD

ANCHORAGE, ALASKA

Table of Contents

STATEMENT OF WORK FOR
REMEDIAL DESIGN AND REMEDIAL ACTION
STANDARD STEEL AND METALS SALVAGE YARD
ANCHORAGE, ALASKA

1.0 PURPOSE

The purpose of this Statement of Work (SOW) is to set forth requirements for implementation of the remedial design (RD) and remedial action (RA) set forth in the Record of Decision (ROD), which was signed by the Regional Administrator of the United States Environmental Protection Agency (EPA), Region 10, on July 16, 1996, for the Standard Steel and Metals Salvage Yard Site (Site). The Settling Defendants and, for purposes of implementing institutional controls, the Owner Settling Defendant, shall follow the ROD, this SOW, the approved RD Work Plan, the approved RA Work Plan, EPA's Superfund Remedial Design and Remedial Action Guidance (OSWER Directive No. 9355.0-4A) and any additional guidance referred to in writing or transmitted to Settling Defendants or Owner Settling by EPA for submitting deliverables involved with designing and implementing the RA(s) at the Site.

The Settling Defendants shall coordinate with the Owner Settling Defendant to implement the ROD in accordance with the planned reuse of the property, where practicable. The coordination shall include: future development plans; siting of a Toxic Substances Control Act (TSCA) landfill; and design (dimensions and utility access corridors) of the TSCA landfill. All coordination shall occur in accordance with the performance standards set forth in the ROD and shall address input from the community, to the extent practicable.

2.0 REMEDIAL ACTION/PERFORMANCE STANDARDS

Settling Defendants shall design and implement the RA, stabilization/solidification (S/S), to meet the performance standards and specifications set forth in the ROD and this SOW. Performance standards shall include cleanup standards, standards of control, quality criteria, and other substantive requirements, criteria, or limitations including all Applicable or Relevant and Appropriate Requirements (ARARs) set forth in the ROD, this SOW, and/or Consent Decree.

2.1 The Selected Remedy

Based upon consideration of the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601 et. seq., a detailed analysis of the potential remedial alternatives, and public comments, EPA has determined that S/S is the most appropriate remedy for the Site. A summary of soil treatment and disposal standards is provided in Table 3-2 of this document. The key components of the selected remedy include:

- Removal of regulated material currently stockpiled on-site and of previously generated investigation derived wastes with disposal in a RCRA Subtitle C or D landfill or recycling of the materials, as applicable;

- Off-site disposal of remaining scrap debris by recycling or disposal in a RCRA Subtitle D landfill; or, if the debris is a characteristic hazardous waste or contains greater than 50 mg/kg PCBs or 10μg/100cm^2 PCBs by standard wipe tests, treatment (if necessary) and disposal in a RCRA Subtitle C or TSCA landfill;

- Excavation and consolidation of all soils exceeding a 10 mg/kg PCBs or exceeding 1000 mg/kg lead cleanup level;

- S/S treatment of all soils having contamination levels at or greater than 1000 mg/kg lead or at or greater than 50 mg/kg PCBs;

- On-site disposal of S/S-treated soils and of excavated soils contaminated with between 10 mg/kg and 50 mg/kg PCBs in a TSCA landfill;

- Excavation of soils contaminated above 1.0 mg/kg PCBs and 500 mg/kg lead from the Ship Creek floodplain and consolidation of these soils on the portions of the Site where use and access restrictions will be implemented;

- Repair and the continued maintenance of the erosion control structure located on the bank of Ship Creek;

- Maintenance of the landfill;

- Implementation of institutional controls to limit land uses of the Site and, if appropriate, Site access; and,

- Monitoring of groundwater at the Site to ensure the continued effectiveness of the RA.

2.1.1 Scrap Debris Disposal. Approximately 150 tons of debris

generated during the previous scrap removal action remain stockpiled on-site. All scrap and debris including that generated during soil pre-screening activities and located within the channel of Ship Creek but excluding recyclable scrap metals, shall be collected and transported off-site and disposed at a permitted Subtitle C, D, or TSCA landfill, as appropriate. Disposal shall comply with all applicable rules and regulations. Scrap metal shall be recycled through a legally permitted scrap metal recycler. Non-recyclable scrap metal may be incorporated into the on-site TSCA landfill if it will not compromise the structural integrity of the landfill.

2.1.2 Regulated Material Removal. Approximately 290 drums and other materials were stored on-site. All of the drums and other regulated material, except investigation-derived wastes, were removed in 1996 pursuant to EPA's request under the RI/FS Administrative Order on Consent. The drums contained materials collected by the EPA during previous emergency removal actions, oil and fuel salvaged during scrap removal actions, and decontamination wastes and personal protective equipment generated during the RI field work. EPA approved the final disposal report for these wastes.

2.1.3 Excavation. All soils containing PCB contamination above 10 mg/kg and all soils containing lead contamination above 1000 mg/kg shall be excavated and placed within an on-site TSCA landfill. Soils within the Ship Creek 100 year floodplain shall be excavated when contaminant levels exceed 1 mg/kg PCBs or 500 mg/kg lead and shall be placed on the Site where use and access restrictions will be implemented.

2.1.3.1 Confirmation Soil Sampling Design. The US EPA Data Quality Objective (DQO) process shall be followed to develop a statistical sampling design rationale for the number of samples required to support defensible decision making. The DQO shall be presented to the EPA prior to developing the final sampling design. Limits on false negative and false positive decision errors shall be presented during scoping of the initial sampling design. Settling Defendants shall utilize methods outlined in the EPA guidance document "Methods for Evaluating the Attainment of Cleanup Standards," along with engineering judgment, to determine the appropriate sample size, and thus the size of the sampling grids. The confidence interval approach may be used to evaluate compliance with the soil cleanup levels; the statistical test will be performed with a Type 1 level of 0.05% (95% confidence) to demonstrate that the upper confidence interval for the mean of the soil PCB and lead concentration remaining after soil excavation is less than the soil cleanup levels. The US EPA documents, EPA QA/G-4, EPA QA/G-4S, and EPA QA/G-4GEFT, provide

guidance to assist organizations plan, implement, and evaluate the DQO process.

2.1.3.2 Contamination Levels. Contaminant levels shall be determined prior to excavation by employing current test data or by additional sampling and analyses, if necessary. Soils shall not be stockpiled in a manner that will artificially reduce existing contaminant concentrations, unless the stockpiled soil will be S/S treated and the soils are blended to create a more uniform S/S feed stream.

2.1.3.3 Soil Processing. Soil having contamination above cleanup levels shall be excavated, screened, and pre-processed to remove materials not suitable for S/S. Soil containing less than 1,000 mg/kg lead and greater than 10 but less than 50 mg/kg PCBs shall be placed in the on-site TSCA landfill at a depth of greater than one foot below the finished surface and above the zone of normal seasonal groundwater fluctuation. If soils with PCB concentrations between 10 mg/kg and 50 mg/kg are placed on the top of the landfill, a cap that will prevent erosion of contaminated soil; prevent infiltration of rainwater through contaminated soil; and, prevent contact with the contaminated soils shall be designed and constructed.

2.1.3.4 Grading/Backfilling/Cover. Excavations advanced below the zone of groundwater fluctuation (zone) shall be backfilled to the top of the zone with clean fill defined as soil containing less than 1 mg/kg PCBs. The Site shall be graded to prevent surface water runoff from the Site directly into Ship Creek. Excavated areas above the zone and within the boundaries of the TSCA Landfill shall be backfilled with soils containing untreated soils having contamination levels between 10 and 50 mg/kg PCBs. Excavated areas outside of the TSCA Landfill boundary shall be backfilled with soils containing less than 10 mg/kg PCBs. The surface of the site shall be covered with a minimum of 12-inches of clean soils defined as soil containing less than 1 mg/kg PCBs which will support a vegetative cover or shall be paved to prevent erosion of surface soils.

2.1.4 Soil Pretreatment/Prescreening. All soil contaminated with greater than or equal to 50 mg/kg PCBs and/or greater than or equal to 1000 mg/kg lead shall be treated by S/S and pretreated to screen out material that is oversized and/or may interfere with the S/S treatment process. Potential material to be screened out includes, but is not limited to, wood, cardboard, wire, cobbles, and scrap debris. The scrap debris includes metal and wood. If the RD determines that metal scrap will not interfere with the performance of the final S/S monolith, then this material may be included in the treatment process. Wood and

other organic debris shall be screened out and disposed off-site pursuant to all applicable rules and regulations. Soils and debris shall be screened in such a manner to minimize dust generation and meet the requirements for dust control established for the project. Cobbles may be separated from the debris in an additional screening step. The cobbles may be combined with other fill material to backfill site excavations after they have been cleaned of exterior contamination using a high pressure, low volume spray system to levels equal to or less than untreated soils for the particular depth of disposal they are to be placed or placed in the TSCA landfill after similar cleaning of exterior surfaces or incorporated into the solidified soil after crushing, if necessary, or disposed of off-site in a permitted TSCA landfill.

2.1.5 S/S Process. The Settling Defendants or their agent (Contractor) shall develop an S/S mix design that minimizes volume increases, reduces freeze-thaw effects, and maximizes the solidified soil's long-term durability and potential as a building platform. The addition of pozzolans shall be evaluated to reduce pH changes in the solidified soils and the temperature increases during curing. A preliminary treatability study was performed by Woodward Clyde (Woodward Clyde, October 1994) that determined a mixture of 16% cement and 8% fly ash to be a possible S/S mix ratio. Light non-aqueous phase liquids (LNAPLs) excavated with the contaminated soils shall be included with the soil that is S/S if it is determined that the LNAPL will not interfere with mix curing and is not considered a liquid based on the results of paint filter testing. If the LNAPL is considered a liquid or will interfere with the curing of the monolith, then the LNAPL shall be collected and transported off-site for incineration.

2.1.5.1 Expanded Treatability Study. A Design Level Treatability Study was initiated in 1996 to further assess the stability and physical characteristics of the S/S process and to demonstrate the predicted effectiveness of the S/S process. The testing shall include:

- ANS 16.1, "American Nuclear Society Measurement of the Leachability of Solidified Low-Level Radioactive Waste by a Short Term Test Procedure" (see Section 2.1.5.2 in this SOW);
- TCLP analysis on the solidified material;
- Additional leaching test(s) on solidified samples subjected to test procedures to simulate long term weathering (freeze-thaw, etc.), compression, etc.; and,

- An evaluation of chemical/physical properties such as temperature and pH on the solidification process.

If inadequate durability is obtained, additional engineering controls (e.g., modifying the mix design, increasing the burial depth, and/or providing a low permeability liner and cover for the treated soil) shall be implemented at the discretion of EPA.

2.1.5.2 S/S Mix Testing. In order to evaluate the effectiveness of the S/S process, the following physical and chemical tests of treated, solidified soil shall be established as minimum performance standards. The RD shall also address long term performance of the S/S soils placed into the TSCA landfill (see Section 2.1.9 of this SOW). The minimum performance standards listed below shall be demonstrated in the laboratory and in the field during construction. Compliance with the performance standards during construction shall be evaluated through construction quality assurance measures implemented to ensure that the design S/S mix is properly implemented. Laboratory testing on archived samples shall be performed after construction is completed and compliance with the performance standards shall be documented in the Construction Completion Report.

- The Toxicity Characteristic Leaching Procedure (TCLP) test values for PCBs shall be 0.5 μg/L or less. For lead the values shall be 5 mg/L or less. These values reflect the maximum contaminant levels (MCL) for PCBs and the Maximum Concentration of Contaminants for the Toxicity Characteristic test, pursuant to 40 CFR 261.24, Table 1, for lead.

- The 28-day unconfined compressive strength shall be greater than 50 psi (ASTM Method D2166 or equivalent).

- The triaxial permeability of the cured S/S monolith shall be less than 1×10^{-7} cm/sec (USACE Method 1110-2-1906 or equivalent).

- ANS 16.1, "American Nuclear Society Measurement of the Leachability of Solidified Low-Level Radioactive Waste by a Short Term Test Procedure." This test shall demonstrate that the S/S monolith does not leach lead above 15 μg/L under natural pH leaching conditions. This is a change of a specific test mentioned in the ROD (PSA Mod. MCC-1 Static Leach Test [U.S. DOE-5820]) made necessary because the original test method is no longer an approved procedure. The test shall be conducted in accordance with the approved Design Level Treatability Study Work Plan and shall be modified to allow long-term analysis of leachate and for the

use of a test method designed for radioactive materials with soils that are non-radioactive in nature. A life expectancy of 1000 years shall be a design goal. Life expectancy is defined as the time before contaminants are released above design criteria from the TSCA landfill.

2.1.5.3 Site Use. An important factor in evaluating S/S is the effect of the solidified soils on the Site given future land use. The solidified soil shall not be placed within the 100-year floodplain of Ship Creek and shall be located at an elevation at least one foot above the maximum normal seasonal groundwater table elevation. The solidified soils shall be configured to accommodate future site development to the greatest extent practicable. In the event there is no planned future use of the solidified soil as a building foundation or parking area or the Site will not otherwise be capped, a cover to protect the landfill shall be placed and constructed to meet the Performance Standards contained in Paragraph 2.1.9. below. The cover shall be maintained to comply with the Performance Standards unless or until the area above the S/S monolith is used for a building foundation or covered for a parking lot or otherwise capped.

2.1.5.4 Site Controls. There are potential short-term human health and environmental impacts associated with contaminated soil excavation and the S/S treatment process. One potential impact is the generation of contaminated dust that could be inhaled by site workers, members of the community, or could migrate to surface water or adjacent properties. The Contractor shall design and implement controls after EPA review and approval to minimize dust generation. Control steps shall include the use of dust suppressants and/or other equally effective process or processes as approved by EPA and the collection and analysis of air samples as necessary to confirm that the dust control requirements for the project are being met. A second potential impact is the migration of Contaminants of Concern (COCs) to ecological receptors via surface water runoff. The Contractor shall include in the RA Work Plan measures to mitigate this migration. A third potential impact is the volatilization of PCBs during the S/S process. This potential shall be evaluated during treatability testing and appropriate measures shall be implemented to prevent volatilization of PCBs or to control the release of volatilized PCBs during treatment. A final potential impact is physical injury to workers. This impact shall be controlled by the institution of appropriate health and safety procedures.

2.1.6 Confirmation Sampling. A confirmation sampling program shall be designed and implemented to determine the amount of soil to be excavated and treated and to document that all soils above

cleanup levels are removed, contained, and/or treated. Confirmation testing shall include analysis for both lead and PCBs. If testing of an excavation indicates that the lead and/or PCB cleanup level is exceeded, additional material shall be excavated vertically and/or horizontally until statistical compliance with the Soil Remediation Verification Plan is met. Samples of the S/S soil shall be collected and archived for future evaluation and testing (see Section 4.6 of this SOW). Three sample cylinders of the S/S soil shall be prepared and archived for every 1000 cubic yards of treated soil produced.

2.1.7 Treatment Equipment and Staging Area Preparation. A soil staging area shall be set up on the Site. The area shall be lined by 30-mil thick plastic sheeting at a minimum. An area near the soil staging area shall be cleared, compacted, and bermed for equipment set up. Utility hook-ups shall be established as required for the equipment.

2.1.8 Consolidation of Soil from the 100 year Floodplain. Soils within the Ship Creek 100 year floodplain that contain lead or PCBs at concentrations at or greater than 500 mg/kg lead or at or greater then 1 mg/kg PCBs shall be excavated and consolidated within the portion of the Site where use and access restrictions will be implemented, and outside of the 100 year floodplain. A small flood plain area beyond the southwest corner of the existing fence contains soil with greater than 1 mg/kg PCBs. The area disturbed by excavations shall be restored to the original grade and revegetated with native species. The consolidation action shall not include any excavation or disposal of hazardous waste or TSCA-regulated material.

2.1.9 TSCA Landfill. Treated soil and soils at or above 10 mg/kg PCBs shall be disposed into a Contractor designed and constructed on-site TSCA landfill. The specific location and dimensions of the landfill shall be determined during the RD, but in no instance shall the landfill or any portion thereof be located within the 100-year floodplain of Ship Creek. The relevant TSCA regulations for landfill design are provided in 40 CFR § 761.75(b), except the requirements waived in the ROD pursuant to 40 CFR § 761.75(c)(4) and set forth below. S/S soils with lead or PCB concentrations at or greater than 1,000 mg/kg and/or 50 mg/kg, respectively, shall not be placed in the top foot of the landfill or within the zone of groundwater fluctuation. Surface concentrations of contaminants in soils shall be less than 10 mg/kg PCBs. Soils/fill having contaminant concentrations of greater than 1 mg/kg PCBs shall not be placed below the uppermost limit of the groundwater fluctuation zone as defined in the Remedial Investigation Report.

Routine maintenance and inspection of the TSCA landfill shall be conducted during groundwater monitoring events and after any seismic or flood event. The landfill shall be designed and located to maximize future use of the Site, preferably to utilize the solidified soils as a building foundation or parking area if possible. If use of the landfill as a foundation or parking lot does not occur, a cover consisting of an impermeable membrane, drainage layer, and erosion control layer shall be provided. Unless otherwise approved by EPA, these layers will consist of an impermeable (less than $1x10^{-6}$ cm/sec permeability) membrane, a 12-inch thick drainage layer, and 12-inch thick layer of growth media to serve for erosion control. Goals of the cover shall include allowing the landfill to function with minimal maintenance and to promote drainage from, reduce freeze thaw effects on, and minimize erosion or abrasion to the treated soils. 40 CFR 264.310(a) is relevant and appropriate for this action.

2.1.9.1 Regulatory Requirements. The following technical requirements specified in 40 CFR § 761.75(b) are waived: (1), (2), (3), (7), and (8). 40 CFR § 761.75(b)(9)(i) may be waived upon written request if the S/S soil mass is designed and used as a building foundation or is paved over for a parking lot or is otherwise capped. If the RD does not include such a future use design, a waiver for a fence, wall, or similar device around the landfill will not be considered.

2.1.10 Waste Shipment. Shipment of wastes shall be conducted as part of debris, and potentially LNAPL, disposal. Debris and wastes shall be shipped pursuant to Department of Transportation rules and regulations regarding transport of hazardous waste, if applicable. All off-site treatment, storage, and disposal (TSD) facilities shall be in compliance with the off-site Disposal Rule (40 CFR 300.440)

2.1.11 Repair of Ship Creek Erosion Control Wall. The erosion control wall constructed during a previous removal action along Ship Creek was repaired in 1996. Further repair and maintenance of this structure may be needed to meet the goals of the Floodplain and Protection of Wetlands Executive Orders, as well as, to ensure protection of the TSCA landfill once constructed. Repair of the erosion control wall, if necessary, shall comply with the substantive requirements of Section 404(b)(1) of the Clean Water Act and its implementing regulations, and of the Alaska Fish and Game Department.

2.1.12 Flood Evaluation. As part of RD, a study shall be conducted to evaluate the 100-year and 500-year flood potentials for Ship Creek and their potential impacts on the Site. This

study shall produce updated flood maps depicting the 100-year floodplain and the 500-year floodplain for the Site. The results of the study shall serve as the basis for the design of appropriate controls to prevent damage to the landfill from flooding.

2.1.13 Institutional Controls. In addition to the RAs used to treat COCs, institutional controls shall be implemented to prevent unacceptable exposure of the public to contamination remaining in source areas at concentrations above 1 mg/kg PCBs and/or above 500 mg/kg lead. Specific controls shall include restrictions limiting future land use, preventing groundwater use, and limiting site access, as appropriate and in accordance with Section IX of the Consent Decree. EPA guidance suggests selecting institutional controls for solidified PCBs based on mobility (TCLP) testing and exposure potential.

2.1.14 Deed Notice and Land Use Restrictions. A deed notice shall be recorded on the property title records for the Site and shall serve to notify any subsequent purchaser and/or successor in interest that the property is subject to a CERCLA ROD. The selected cleanup levels for the COCs are based on a future industrial land use scenario. Consequently, land use restrictions in accordance with Section IX of the Consent Decree shall be implemented at the Site to assure that no residential land uses, or commercial uses with potential chronic exposures of children (i.e., day care center) are allowed. To assure long-term protectiveness, the land use restrictions shall run with the land, bind all successors in interest, and be recorded in the public property records. The objectives of the land use restrictions are:

- Ensure that the Site use continues to be industrial or commercial and to prevent use of the Site for commercial developments that involve potential chronic exposures of children to soil (e.g., use of the site for a day care center);

- Restrict activities at the Site that could potentially impair the integrity of the TSCA landfill; and,

- Prevent movement of soil containing greater than 1,000 mg/kg lead or greater than 10 mg/kg PCBs to the surface or within the top foot of soil where chronic, long-term exposures could occur.

2.1.15 Groundwater Use Restrictions. Groundwater use restrictions are necessary to prevent the installation of groundwater supply wells at the Site. The property interest

implemented to assure acceptable future land use pursuant to Section IX of the Consent Decree shall include provisions for restricting use of groundwater underlying the Site for any purpose. In addition to the recorded restrictions, all available regulatory controls shall be undertaken by providing written notification of the restrictions and Site conditions to local, regional, and state agencies, departments, and utilities. The property owner(s) shall be responsible for providing restriction notifications in accordance with Section IX of the Consent Decree.

2.1.16 Access Restrictions. Access to all areas of the Site impacted by soil contamination shall be restricted during the RA by use of temporary security fencing or other means. Access to the landfill shall be prohibited to the general public and shall be limited to Site workers. In compliance with 40 CFR § 761.75(b)(9)(i), a six foot high woven mesh fence, wall, or similar device shall be designed, constructed, and maintained during landfill construction and maintained throughout the life time of the TSCA landfill. However, if the S/S soil mass is capped or designed and used as a building foundation or parking lot, the requirement to maintain a fence after landfill construction may be waived by EPA upon written request. Unrestricted access by the general public shall be prohibited to those areas of the site where surface contamination of more than 1 mg/kg PCBs remains after all excavation, treatment, and disposal is complete as follows: unrestricted access to areas with surface concentrations between 1 mg/kg and 10 mg/kg PCBs that are not otherwise capped or designed and used as a building foundation or parking lot shall be limited by the installation and maintenance of a six foot high fence or similar structure.

2.1.17 Groundwater Monitoring. Following completion of RA construction activities, groundwater monitoring for PCBs and metals shall be conducted twice per year for the first two years of operation and may be reduced in frequency to annually, thereafter, with the approval of EPA in consultation with Alaska Department of Environmental Conservation for a duration of at least five (5) additional years. After five years, an assessment of the groundwater data shall be performed to determine whether groundwater monitoring is still required or whether the monitoring frequency requires additional alteration.

2.1.17.1 Groundwater Contaminant Levels. Groundwater monitoring shall be conducted to assess the effectiveness of the RA for protecting groundwater. The groundwater standards that shall be achieved are the MCL and action level for PCBs and lead, 0.5 μg/L and 15 μg/L respectively, directly downgradient at the Site boundary.

2.1.17.2 Groundwater Testing Methods. Monitoring of groundwater down-gradient of the landfill for PCBs (EPA method 8080A), lead (EPA method 6000/7000), pH, specific conductance, and chlorinated organics (40 CFR § 761.75(b)(6)(iii)), or methods with equivalent detection limits and accuracy, shall be conducted to ensure the landfill is not contributing contamination to the groundwater nor altering groundwater conditions.

2.1.18 Storm water Management. The Site shall be graded to prevent surface water discharges from the Site directly into Ship Creek. Site Storm water structures shall be designed to meet the requirements of 40 CFR § 761.75(b)(4)(ii), and constructed to prevent contaminated discharges of Storm water directly into Ship Creek and prevent the transport of contaminated sediments off-site.

2.1.19 Operation and Maintenance. The RA shall be operated and maintained for as long as the S/S soils (landfill) remain on-site. Operation and maintenance of the RA shall include:

- Maintenance of the landfill to ensure that it retains its structural integrity and prevents release of PCBs and lead through erosion (including flood and seismic events), leaching, and/or excavation;

- Maintenance of the erosion control wall along Ship Creek. The erosion control wall shall be inspected once per year for each of the first five years in addition to after flood, seismic, and extreme precipitation events defined as 24-hour, 25-year storms;

- Maintenance of a six foot (minimum) woven mesh fence, wall, or similar device or other means to prevent unauthorized access to the site, if deemed necessary after EPA review of the RD and in accordance with the terms of Paragraph 2.1.16 above.

3.0 CLEANUP AND TREATMENT/DISPOSAL STANDARDS

3.1 Soil Cleanup Standards

TABLE 3-1
Soil Cleanup Standards

Contaminant	Within Fence Line	Beyond Fence Line Within 100 yr. Floodplain
PCBs	10 mg/kg	1 mg/kg
Lead	1000 mg/kg	500 mg/kg

3.2 Soil Treatment Standards

Table 3-2
Soil Treatment and Disposal Standards

Contaminant	Treatment Level	Treatment Method	Disposal Option
PCBs	< 1 mg/kg	None	Any on-site[1] location/depth
PCBs	1 to 10 mg/kg	None	On-site, 1.0 feet above the GFZ[2]
PCBs	>10 to <50 mg/kg	None	TSCA Landfill depths between 1.0 feet to the top of the GFZ
PCBs	≥50 mg/kg	S/S	TSCA Landfill depths between 1.0 feet to the top of the GFZ

Lead	≤500 mg/kg	None	Any on-site location/at depths above the top of the GFZ
Lead	>500 to <1000 mg/kg	None	On-site, TSCA Landfill depths between 1.0 feet to the top of the GFZ
Lead	≥1000 mg/kg	S/S	TSCA Landfill depths between 1.0 feet to the top of the GFZ

[1] On-site, in this context, refers to within the fence line
[2] Groundwater fluctuation zone

3.3 TSCA Landfill and Stabilized Soil Performance Standards

TSCA landfill and treated soil performance standards are presented in Sections 2.1.9 and 2.1.5.2 of this SOW.

3.4 Groundwater Monitoring Compliance Standards

Monitoring wells will be located above the Bootlegger Cove formation, in the upper aquifer, and shall be monitored to confirm groundwater meets the following standards. Monitoring wells shall be constructed to State of Alaska Department of Environmental Conservation "Recommended Practices for Monitoring Well Design, Installation, and Decommissioning" (Guidance No. 001, version 2.2, April 1992). Surface concrete pads around monitoring wells shall be substituted with a minimum depth of 12 inches, 3/4-inch minus crushed gravel to prevent frost heaving of the well casing.

Table 3-3
Groundwater Monitoring Compliance Standards

Contaminant	Compliance Level	Compliance Point
PCBs	<0.5 μg/L	Downgradient Border of Landfill

Lead	<15 μg/L	Downgradient Border of Landfill
pH	To Be Determined	Downgradient Border of Landfill
Specific Conductance	To Be Determined	Downgradient Border of Landfill
Chlorinated Organics	Not to exceed MCLs	Downgradient Border of Landfill

4.0 SCOPE OF REMEDIAL DESIGN AND REMEDIAL ACTION

The Remedial Design/Remedial Action shall consist of the following six tasks. All plans are subject to EPA approval.

- Task 1: RD Work Plan

- Task 2: Remedial Design Phases
  A. Conceptual Design.
  B. Preliminary (30%) Design. This will incorporate the conceptual design, if applicable.
  C. Prefinal (90-95%) Design/Final (100%) Design.

- Task 3: Remedial Action/Construction Work Plan

- Task 4: Remedial Action Construction
  A. Preconstruction Inspection and Meeting
  B. Prefinal Construction Completion Inspection
  C. Prefinal Construction Completion Report
  D. Final Construction Completion Inspection (if necessary)
  E. Construction Completion Report (Draft and Final)

- Task 5: Operation and Maintenance Plan

- Task 6: Performance Monitoring

- Task 7: Completion of Remedial Action
  A: RA Completion Notice
  B: Reports
  1. Draft RA Completion Report
  2. Final RA Completion Report

4.1 Task 1: Remedial Design Work Plan

The Settling Defendants shall submit a Work Plan which shall document the overall management strategy for performing the

design, construction, operation, maintenance, and monitoring of the RA for EPA to review and approve. The plan shall document the responsibility and authority of all organizations and key personnel involved with the RA implementation and shall include a description of qualifications of key personnel directing the RD, including Contractor personnel. The Work Plan shall also contain a schedule of RD activities. The Settling Defendants shall submit a RD Work Plan in accordance with Section XII, Paragraph 11 of the Consent Decree and Sections 2.0 and 5.0 of this SOW.

4.1.1 Plan Contents. The RD Work Plan shall incorporate results of pre-design studies performed pursuant to the September 1992 RI/FS Administrative Order of Consent (AOC) and shall provide information necessary to fully implement the RD and RA(s). The Plan shall include, at a minimum, a Sampling and Analysis Plan (SAP) which includes a Quality Assurance Project Plan (QAPP) and a Field Sampling Plan (FSP), a Health and Safety Plan, a Construction Quality Plan, and a schedule for implementing the RA. The RD Work Plan shall incorporate a groundwater sampling event to determine groundwater conditions prior to commencement of Remedial Action. This event shall sample for the parameters identified in Table 3-3. The RD Work Plan shall include either a conceptual design of the TSCA landfill and future use of the facility or a process to incorporate the Owner Settling Defendant's planned future use of the Site. A conceptual design shall be submitted no later than 6 months after submittal of the RD Work Plan.

4.1.2 Design Level Treatability Study Results. Soil samples for the Design Level Treatability Study were collected as part of the RI/FS Administrative Order on Consent. The Design Level Treatability Study Work Plan was finalized and approved as part of the RI/FS Administrative Order on Consent. The Design Level Treatability Study in accordance with the approved Design Level Treatability Study Work Plan shall be performed and completed under the RD/RA Consent Decree and this SOW. The available results of the Design Level treatability studies shall be included with the Preliminary (30%) Design.

4.2 Task 2: Remedial Design Phases

Settling Defendants shall prepare construction plans and specifications to implement the RAs at the Site as described in the ROD and this SOW. Plans and specifications shall be submitted in accordance with the schedule set forth in Section 5.0 of this SOW. Subject to approval of the EPA, Settling Defendants may submit more than one set of design submittals reflecting different components of the RA. The plans and specifications shall be developed in accordance with EPA's

Superfund Remedial Design and Remedial Action Guidance and shall demonstrate that the RA meets the objectives of the ROD, conceptual design, and this SOW, including all Performance Standards. Settling Defendants shall meet regularly with the EPA to discuss design issues and the schedule for design and implementation of the remedy.

4.2.1 Conceptual Design. Settling Defendants shall submit a Conceptual Design Plan for the future development of the Site. The Conceptual Design Plan must have the written concurrence of Owner Settling Defendant. Owner Settling Defendant shall coordinate with Settling Defendants to prepare the Conceptual Design Plan to ensure the RD considers future reuse of the Site. If the Owner Settling Defendant does not coordinate future use plans of the Site, or a Conceptual Design Plan cannot be prepared within six months of submittal of the RD Work Plan, in EPA's discretion, a Conceptual Design Plan may be waived. If the Conceptual Design Plan is waived the RD must consider that the Site will not be reused for any purpose. This will require alterations in the design and cover requirements of the landfill to ensure it is properly maintained and protected, and appropriate site controls are in place, as discussed in Paragraphs 2.1.5.4. and 2.1.9. above.

4.2.2 Preliminary Design. Settling Defendants shall submit the Preliminary Design when the design effort is approximately 30 percent complete. The Preliminary Design submittal shall include or discuss, at a minimum, the following:

- Preliminary plans, drawings, and sketches, including design criteria;
- Results of treatability studies and additional field sampling as available;
- Design assumptions and parameters, including design restrictions, process performance criteria, appropriate unit processes for the S/S treatment train, anticipated design duration and leachate generation of the landfill;
- Proposed cleanup and treatment verification methods, including compliance with Applicable or Relevant and Appropriate Requirements (ARARs;
- Outline of required specifications;
- Proposed siting/location of treatment equipment/construction activity;

- Expected long-term monitoring and operation requirements;
- Preliminary construction schedule, including RA contracting strategy;
- Conceptual future use of the site; and,
- Draft Health and Safety Plan for construction.

4.2.3 Prefinal and Final Designs. Settling Defendants shall submit the Prefinal Design when the design effort is 95 percent complete and shall submit the Final Design when the design effort is 100 percent complete. The Prefinal Design shall address all written comments made regarding the preceding design submittal. The Final Design shall address all written comments made to the Prefinal Design and shall include reproducible drawings and specifications suitable for RA contractor bid advertisement. The Prefinal Design shall be modified as appropriate to serve as the Final Design if the EPA has no further comments and issues the Notice to Proceed (NTP). The Prefinal and Final Design submittals shall include those elements listed for the Preliminary Design, as well as the following:

- Draft Operation and Maintenance Plan;
- Capital and Operation and Maintenance Cost Estimate. This cost estimate shall refine the Feasibility Study cost estimate to reflect the detail presented in the Final Design;
- Final project schedule for the construction and implementation of the RA which identifies timing for initiation and completion of all critical path tasks. The final project schedule submitted as part of the Final Design shall include specific dates for completion of intermediate major milestones and the project as a whole;
- Final results of the Design Level Treatability Study.

4.3 Task 3: Remedial Action Work Plan

The Settling Defendants shall submit a RA Work Plan which includes a detailed description of major remediation and construction activities, monitoring events, construction quality assurance procedures, equipment staging, compliance monitoring, schedule, and cost estimations.

RA Work Plan shall include, but is not limited to the following items:

- Draft Performance Standard Verification Plan;
- Draft Construction Quality Assurance Plan;
- Draft SAP, including the final QAPP and final FSP/Final H&S Plan/Final Contingency Plan;
- Construction Management Plan (including Project Management Plan);
- Discussion and planning of the RA work Elements, including rationale for the various tasks;
- Relevant changes in the RD work Plan;
- Identification of RA inspections, hold points, and reports;
- Identification of protocol and coordination of field oversight and inspections, where applicable;
- Response procedures and contingency plan;
- Waste Management Plan;
- Equipment Decontamination Plan;
- Performance Measurement points and rationale for their selection;
- Soil Remediation Verification Plan
- Any other procedures relevant to RA implementation;
- Construction Health and Safety Plan.

The Settling Defendants shall submit a RA Work Plan in accordance with Section XII and Paragraph 12 of the Consent Decree and Section 5.0 of this SOW.

4.4 Task 4: Remedial Action Construction

The Settling Defendants shall implement the RA as detailed in the approved Final Design. The following activities shall be completed in constructing the RA.

4.4.1 Preconstruction Inspection and Meeting. The Settling Defendants shall participate with U.S. EPA and the State in a Preconstruction Inspection and Meeting to:

- Review methods for documenting and reporting construction monitoring and QA/QC data;

- Review methods for distributing and storing documents and reports;

- Review work area security and safety protocol;

- Discuss any appropriate modifications of the construction Quality Assurance Plan (QAP) to ensure that Site-specific considerations are addressed; and,

- Conduct a Site walk-through to verify that the design criteria, plans, and specifications are understood and to review material and equipment storage locations.

The Preconstruction Inspection and Meeting shall be documented by a designated person and minutes shall be transmitted to all parties.

4.4.2 Pre-Final Construction Completion Inspection. Within 15 days after Settling Defendants make the preliminary determination that construction is complete, the Settling Defendants shall notify the EPA and the State for the purposes of conducting a Pre-Final Construction Completion Inspection. The Pre-Final Construction Completion Inspection shall consist of a walk-through inspection of the entire Site with EPA and State representatives. The inspection is to determine whether the RA construction phase is complete and consistent with the contract documents, ROD and RA Workplans. The Pre-final Construction Completion Report shall outline the outstanding construction items, actions required to resolve each item, anticipated completion date for each item, and a proposed date for a Final Construction Completion Inspection.

4.4.3 Final Construction Completion Inspection (if necessary). Within 15 days after completion of any work identified in the Pre-Final Construction Completion Report, the Settling Defendants shall notify the EPA and the State for the purposes of conducting a Final Construction Completion Inspection. The Final Construction Completion Inspection shall consist of a walk-through inspection of the Site by EPA and State representatives with the Settling Defendants. The Pre-Final Construction Completion Report shall be used as a checklist for insuring tasks identified during the Pre-Final Construction Completion Inspection have been addressed. Confirmation shall be made that outstanding items have been resolved.

4.4.4 Reports. The following reports shall be submitted by the

Settling Defendants within the time limitations noted.

4.4.4.1 Pre-Final Construction Completion Report. Within fifteen (15) days of the Pre-Final Construction Completion Inspection, Settling Defendants shall submit a Pre-Final Construction Completion Report. The Pre-Final Construction Completion report shall outline the outstanding construction items, actions required to resolve each item, anticipated completion date for each item, and a proposed date for a Final Inspection. In the report, a registered professional engineer and the Settling Defendants' Project Coordinator shall state that the RA has been constructed in accordance with the approved design and specifications. The written report shall include as-built drawings signed and stamped by a registered professional engineer. The report shall contain the following statement, signed by a responsible corporate official of a Settling Defendant or the Settling Defendants' Project Coordinator:

> "To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

If, after the Pre-Final Construction Completion Inspection and receipt and review of the Pre-Final Construction Completion Report, EPA may approve, request modifications, or disapprove the Report pursuant to Section XI(EPA Approval of Plans and Other Submissions), after reasonable opportunity to review and comment by the State. If EPA determines that construction of the Remedial Action or any portion thereof has not been completed in accordance with this Consent Decree, EPA will notify Settling Defendants, in writing, of the activities that must be undertaken by Settling Defendants pursuant to this Consent Decree to complete construction of the Remedial Action. EPA will set forth in the notice a schedule for performance of such activities consistent with the Consent Decree and the SOW and finalization of the Construction Completion Report or require the Settling Defendants to submit a schedule to EPA for approval pursuant to Section XI (EPA Approval of Plans and Other Submissions). Settling Defendants shall perform all activities described in the notice in accordance with the specifications and schedules established pursuant to this Paragraph, subject to their right to invoke the dispute resolution procedures set forth in Section XIX (Dispute Resolution). If requested by EPA, Settling Defendants shall schedule a Final Construction Completion Inspection within fifteen (15) days of completion of all activities identified by

EPA to be completed.

4.4.4.2 Final Construction Completion Report. Within ninety (90) days of(i) completion of the last activity required by to be performed by Settling Defendants pursuant to the Pre-Final Construction Completion Inspection and Report, or (ii) the Final Construction Completion Inspection, whichever is later, Settling Defendants shall submit a Final Construction Completion Report. The Final Construction Completion Report shall outline the actions taken to resolve outstanding construction items identified in the Pre-Final Construction Completion Report. The Final Construction Completion Report shall include as-built drawings signed and stamped by a professional engineer. The report shall contain the following statement, signed by a responsible corporate official of a Settling Defendant or the Settling Defendants' Project Coordinator:

"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

4.5 Task 5: Operation and Maintenance

The Settling Defendants shall prepare a Final Operation and Maintenance (O&M) Plan to cover both implementation and long term maintenance of the RAs. The O&M Plan must meet the objectives contained in the ROD and set forth in Paragraph 2.1.19 of this SOW. An initial Draft O&M Plan shall be submitted as a Final Design Document submission. The final O&M Plan shall be submitted to the EPA with the Pre-Final Construction Completion Report and in accordance with the approved construction schedule. The plan shall be composed of the following elements:

- Description of normal operation and maintenance:
  a. Description of tasks for operation and maintenance; and,
  b. Schedule showing frequency of each O&M task.

- Description of potential operation/maintenance problems:
  a. Description and analysis of potential operation and maintenance problems; and,
  b. Common and/or anticipated remedies.

- Description of routine monitoring and laboratory testing:
  a. Description of monitoring tasks;
  b. Description of required data collection, laboratory

tests, and their interpretation;
c. Required quality assurance and quality control;
d. Schedule of monitoring frequency and procedures for a petition to the EPA to reduce the frequency of or discontinue monitoring; and,
e. Description of verification sampling procedures if cleanup or performance standards are exceeded during routine monitoring.

- Description of alternate O&M (only if and when necessary):
  a. Should the TSCA landfill system fail to achieve the Performance Standards, alternate procedures shall be proposed to prevent the release or threatened releases of hazardous substances, pollutants, or contaminants that may endanger public health and/or the environment or exceed performance standards; and,
  b. Analysis of vulnerability and additional resource requirements should a failure occur.

- Corrective Action:
  a. Description of potential corrective actions to be implemented in the event that cleanup or performance standards are exceeded; and,
  b. Anticipated schedule for implementing these corrective actions.

- Safety plan:
  a. Description of precautions, necessary equipment, etc., for Site personnel.

- Description of equipment:
  a. Equipment identification;
  b. Installation of monitoring components;
  c. Maintenance of Site equipment; and,
  d. Replacement schedule for equipment and installed components.

- Records and reporting mechanisms required:
  a. Laboratory records;
  b. Mechanism for reporting emergencies;
  c. Maintenance records; and,
  d. Annual reports to EPA and State agencies.

4.6 Task 6: Performance Monitoring

Performance monitoring shall be conducted to ensure that the Performance Standards are met.

4.6.1 Performance Standard Verification Plan. The purpose of the Performance Standard Verification Plan is to provide a mechanism to ensure that both short-term and long-term Performance Standards for the RA are met. The Draft Performance Standards Verification Plan shall be submitted with the RA Workplan. A separate Performance Standards Verification Plan will not be required if provisions for long term post-construction sampling and analysis are included in the RA QAPP and FSP. Once approved, the Performance Standards Verification Plan shall be implemented on the approved schedule. The Performance Standards Verification Plan shall include:

- a SAP including a QAPP and a FSP; and,
- a Health and Safety Plan.

4.6.2 Performance Sampling of S/S Treated Soil. At the closure of the Site TSCA landfill, two of each of the groups of three S/S archive cylinders shall be buried at the Site in an area outside the boundaries of the landfill. It shall be determined the approximate depth segment of the monolith by elevation each cylinder represents and each cylinder buried to that approximate depth. The ground surface shall be clearly and permanently marked to allow identification of the buried cylinders. At the time of the five year evaluation of landfill performance, the cylinders shall be retrieved and tested according to Section 2.1.5.2 of this SOW. Prior to initiation of the testing program identified, the loss of material from each cylinder shall be determined. Results of this performance evaluation shall be provided to the EPA and State of Alaska representatives in report format. The third of each group of S/S archive cylinders shall be maintained for possible additional testing at a later time.

4.7 Task 7, Remedial Action Completion

4.7.1 Notice of Remedial Action Completion. Upon Settling Defendants determination that the Remedial Action is operational and functional and that Performance Standards have been met, but not less than two (2) years following the Final Construction Completion Inspection, Settling Defendents shall provide notice to EPA and the State that Remedial Action is complete.

4.7.2 Draft Completion of Remedial Action Report. Within thirty (30) days of the Notice required in Section 4.7.1, Settling Defendants shall submit a Draft Completion of Remedial Action Report. This report shall be submitted by the Settling Defendants after construction is complete and performance standards have been met . In the report, a registered professional engineer and the Settling Defendants' project Coordinator shall state that the RA has been constructed in accordance with the approved

design and specifications and is operational and functional. The report shall reference all the data and supporting documentation on which Settling Defendants have determined that all Performance Standards have been met and the RA has been completed in accordance with the ROD, SOW, and this Consent Decree. The written report shall be signed and stamped by a registered professional engineer and reference as-built drawings from the Final Construction Completion Report. The report shall contain the following statement, signed by a responsible corporate official of a Settling Defendant or the Settling Defendants' Project Coordinator:

"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

4.7.3 Final Completion of Remedial Action Report. Within thirty (30) days of receipt of EPA comments on the Draft Completion of Remedial Action Report, Settling Defendants shall submit a Final Completion of Remedial Action Report. In the report, a registered professional engineer and the Settling Defendants' Project Coordinator shall state the RA has been completed in full satisfaction of the requirements of the Consent Decree. The written report shall be signed and stamped by a registered professional engineer and reference as-built drawings from the Final Construction Completion Report. The report shall contain the following statement, signed by a responsible corporate official of a Settling Defendant or the Settling Defendants' Project Coordinator:

"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

5.0 SUMMARY OF MAJOR DELIVERABLES/SCHEDULE

Pursuant to Section 120(e)(2) of CERCLA, substantial continuous on-site RA must commence within 15 months of the Signature of the ROD, which occurred on July 16, 1996. Due to the inappropriateness of initiating Site construction activities at the beginning of the winter season, EPA will authorize an RA start date of as late as May 1, 1998.

Table 5-1
Summary of Major Deliverables/Schedule

Item Number	Title	Due Date
1	RD Work Plan	Thirty (30) days after Notice of Authorization to proceed with RD
2	Preliminary Design (30%)	One Hundred five (105) days after U.S. EPA's approval of final RD Work Plan
3	Pre Final Design (95%)	Sixty (60) days after receipt of EPA's comments on the Preliminary Design
4	Draft O&M Plan	With Pre Final RD
5	Final Design (100%)	Thirty (30) days after receipt of EPA's comments on the Pre Final Design
6	RA Work Plan	With Pre-Final Design
7	Award RA Contract(s)	Sixty (60) days after receipt of EPA's Notice of Authorization to proceed with the RA
8	Pre-Construction Inspection and Meeting	Fifteen (15) days after award of RA contract(s)
9	Initiate RA	Within fifteen (15) days after Pre-Construction Inspection and Meeting.
10	Completion of RA Construction	As approved by EPA in the RA Construction Schedule

11	Pre-Final Construction Completion Inspection	No later than fifteen (15) days after completion of the RA Construction Phase
12	Pre-Final Construction Completion Report	Fifteen (15) days after completion of Pre-Final Construction Completion Inspection
13	Final Construction Completion Inspection (if necessary)	Fifteen (15) days after completion of work identified during the Pre-Final Construction Completion Inspection
14	Final Construction Completion Report (if necessary)	Ninety (90) days after Final Construction Completion Inspection or completion of the last activity required to be performed under Subparagraph 4.4.4.1 of this SOW, whichever is later.
15	Final O&M Plan	With Pre-Final Construction Completion Report
16	Notice of RA Completion	Upon Settling Defendants Determination that Performance Standards have been met and the RA is operating properly and successfully
17	Draft Completion of RA Report	Thirty Days after Notice of RA Completion
18	Final Completion of RA Report	Thirty (30) days after receipt of EPA comments on Draft Completion of RA Report

Consulting Engineering Offices Of
ARTHUR H WHITMER
A Professional Corporation

4201 Tudor Centre Drive, Suite 318
P.O. Box 141968, Anchorage AK 99514

(907) 561-1503
Fax: (907) 561-1504

August 23, 1997

ALASKA RAILROAD RESERVE
POST ROAD INDUSTRIAL LOTS
ANCHORAGE, ALASKA

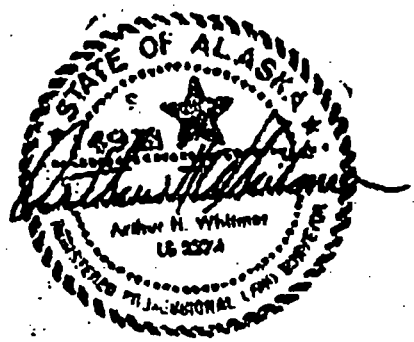
STANDARD STEEL SITE CLEANUP
LEGAL DESCRIPTION

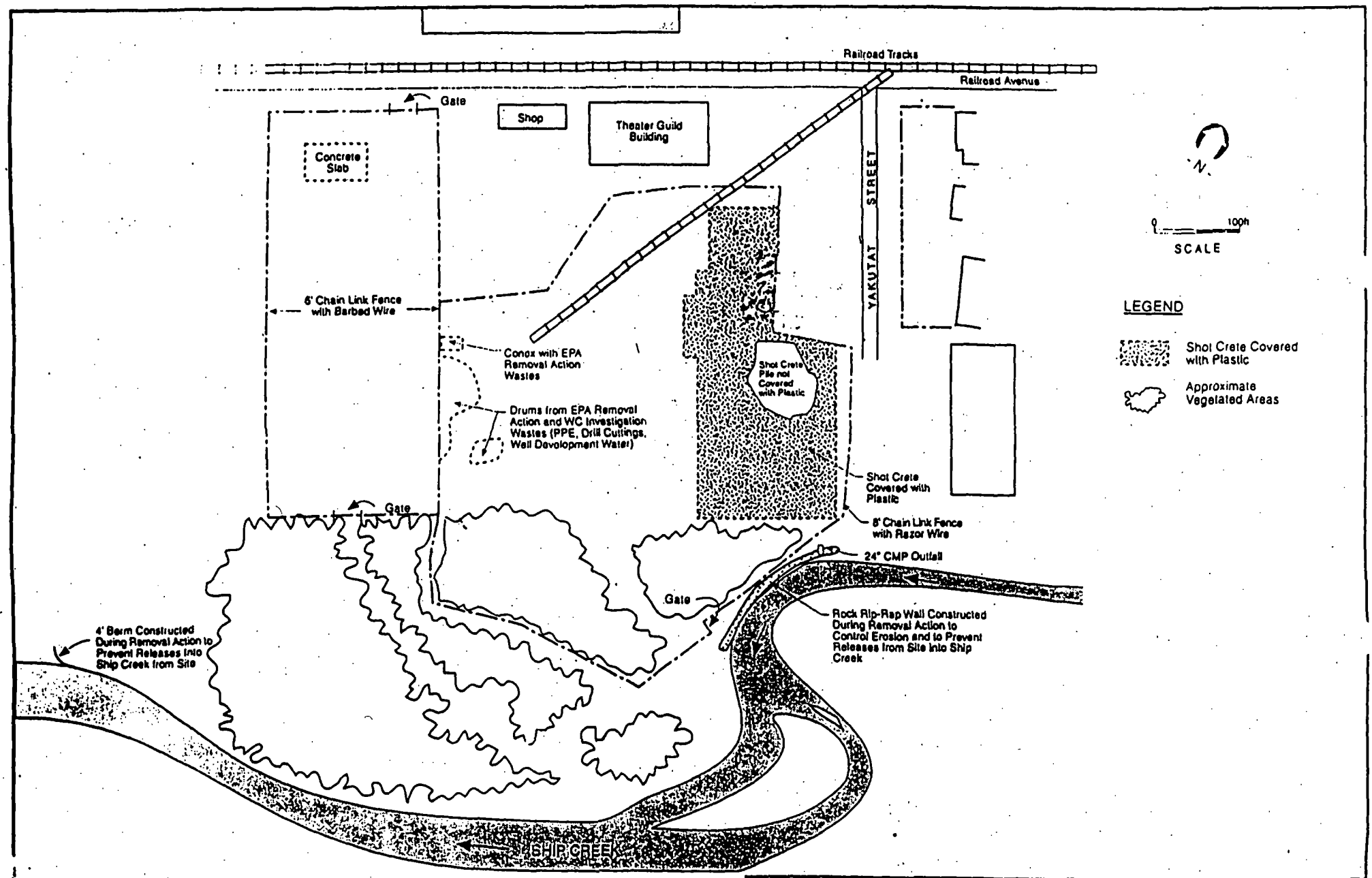
Beginning at the northwesterly corner of Lot 53; thence S 32° 30'30" E a distance of 510.00 feet; thence along Ship Creek Meanders as follows:

S 41° 15'25" W, 54.09'; S 19°09'22"W, 57.22 feet; S 4° 01'53"E, 96.37 feet; S 45°50'52"E, 32.76 feet; S 4° 05'54"W, 34.49 feet, S 23° 05'08"W, 85.10 feet; S 49° 36'47"W, 246.17';S 71° 18'37"W, 203.76';

thence N34° 46'19"W a distance of 277.99 feet; thence N32° 32'30"W a distance of 459.88 feet; thence N57° 27'30"E a distance of 678.95 feet to the point of beginning.

Containing an area of 484,428 square feet or 11.12 acres more or less.





APPENDIX D OF THE CONSENT DECREE FOR REMEDIAL DESIGN AND REMEDIAL ACTION FOR THE STANDARD STEEL AND METALS SALVAGE YARD SUPERFUND SITE

APPENDIX E

DECLARATION OF RESTRICTIVE COVENANTS AND NOTICE OF REMEDIAL ACTION

This Declaration of Restrictive Covenants and Notice of Remedial Action ("Deed Restrictions") is made this ____day of _____ _____ ,1997 pursuant to, and in consideration for, the terms of the prior consent agreements and the Record of Decision ("ROD") pertaining to the Standard Steel Superfund Site ("Site") issued by EPA on July 16, 1996.

1. Grantor: These Deed Restrictions are granted by the Alaska Railroad Corporation and are binding upon its successors and assigns (collectively "Grantor") with respect to a parcel of land located in Anchorage, Alaska, more particularly described in Attachment A (the "Property").

2. Purpose: It is the purpose of these Deed Restrictions to implement the Institutional Controls required by the ROD to notify all successors-in-interest or other persons of the land and water use and access restrictions that apply to the Property to assure the Property will be used only for purposes which are compatible with the Remedial Action and the RD/RA Consent Decree entered into by Grantor, the United States, and other parties, and entered by the U.S. District Court of the District of Alaska on _____ _____, 1997, in the matter of U.S. v. Alaska Railroad Corporation, et. al., A91-0589-CV (JWS), and to ensure that the Property will not be used in a manner that will pose a threat to human health or the environment.

3. Servitude in perpetuity: The covenants, terms, conditions and restrictions of these Deed Restrictions shall be binding upon and inure to the benefit of the Alaska Railroad Corporation, its successors and assigns, any grantee, and their successors and assigns, and shall continue as a legal and equitable servitude running in perpetuity with the Property.

4. **Notice of Remedial Action: THE PROPERTY IS PART OF THE STANDARD STEEL AND METALS SALVAGE YARD SUPERFUND SITE, WHICH THE U.S. ENVIRONMENTAL PROTECTION AGENCY ("EPA"), PURSUANT TO SECTION 105 OF THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT ("CERCLA"), 42 U.S.C. § 9605, PLACED ON THE NATIONAL PRIORITIES LIST, SET FORTH AT 40 C.F.R. PART 300, APPENDIX B, BY PUBLICATION IN THE FEDERAL REGISTER ON AUGUST 30, 1990. 55 FED. REG. 35502. IN THE RECORD OF DECISION (ROD) FOR THE SITE DATED JULY 16, 1996, THE EPA REGION 10 REGIONAL ADMINISTRATOR SELECTED A "REMEDIAL ACTION" FOR THE SITE, WHICH PROVIDES, IN PART, FOR IMPLEMENTATION OF INSTITUTIONAL CONTROLS LIMITING FUTURE LAND USES OF THE SITE, PREVENTING GROUNDWATER USE**

AND LIMITING SITE ACCESS. ANY INTEREST IN THE PROPERTY CONVEYED OR ACQUIRED IS SUBJECT TO THE RESTRICTIVE COVENANTS CONTAINED IN THIS DECLARATION.

5. Restriction on use: The following restrictions apply to the use of the Property, run with the land and are binding upon any grantee.

(i) no residential use or activity shall be permitted on the property, and no commercial use or activity shall be permitted if it involves potential chronic exposures of children to soil (e.g., use of the property for a day care center);

(ii) no use or activity on the property shall be permitted that will disturb any of the remedial measures that have been implemented pursuant to this Consent Decree or that could potentially impair the integrity of the landfill in which contaminated soils and solidified soils have been disposed; and

(iii) except as necessary to perform the Remedial Action, no use or activity on the property shall disturb the surface or subsurface of the land by filling, drilling, excavation, or removal of topsoil, rock or minerals which could move soil containing greater than 1,000 mg/kg lead or 10 mg/kg polychlorinated biphenyl (PCB) to the surface or within the top foot of soil where chronic long-term worker exposures could occur;

(iv) groundwater underlying the property shall not be consumed or used in any way except for the limited purpose of monitoring ground water contamination levels. Ground water wells and facilities installed for such purpose shall only be installed pursuant to a plan approved by EPA;

(v) access to the Toxics Substances Control Act landfill by the general public shall be prohibited, and access by long- or short-term workers shall be restricted in compliance with 40 C.F.R. § 761.75(b)(9)(i), through maintenance of a six-foot woven mesh fence, wall, or similar device. If the solidified soil mass is capped or designed and used as a building foundation or parking lot, EPA may waive this requirement upon a written request which shall include long-term maintenance of such cap, building foundation or

parking lot in accordance with the approved O & M Plan. Unrestricted access by the general public to those areas of the Site where surface contamination of 1 mg/kg PCB or greater remains after all excavation, treatment, and disposal is complete shall be prohibited through maintenance of a six-foot fence, cap, parking lot or similar structure approved by EPA; and

(vi) during remedial design and construction of the remedial action, the public, including long and short-term workers, other than authorized representatives of EPA, the State, and Settling Defendants and Owner Settling Defendant, shall only have access to areas in or around the Site that are not affected by soil contamination.

6 . Reservation When Conveying an Interest: Any instrument conveying an interest in any portion of the Property, including but not limited to deeds, leases and mortgages, must include language that is in substantially the same form as Appendices F or G of the RD/RA Consent Decree. Within thirty (30) days of the date any such instrument of conveyance is executed, the grantor of such instrument must provide grantee with a certified true copy of said instrument and its recording reference.

7 . Administrative jurisdiction: The federal agency having administrative jurisdiction over the instrument on behalf of the United States is the EPA. The Regional Administrator of EPA Region 10 shall exercise the rights granted to the United States herein. If the United States assigns its rights created by this Declaration, unless it provides otherwise in any such assignment document, the rights referred to in this paragraph shall also be assigned.

8 . Enforcement: The grantor shall be entitled to enforce the terms of these Deed Restrictions by resort to specific performance or legal process. All remedies available hereunder shall be in addition to any and all other remedies at law or in equity.

9. Third Party Beneficiary: Any grantor and grantee of an interest in the Property must agree that the EPA and the Settling Defendants in the RD/RA Consent Decree shall be third party beneficiaries of all the benefits and rights reserved and retained by the Grantor in this Declaraciton and as contained in Appendices F and G of the RD/RA Consent Decree.

10. No forfeiture: Nothing contained herein will result in a forfeiture or revision of Grantor's title in any respect.

APPENDIX F

RESERVATION OF ACCESS EASEMENT AND RESTRICTIONS ON USE

This document contains language that shall be included in a deed or other instrument transferring a fee simple or other title interest in real property described in Appendix C of this Consent Decree. Owner Settling Defendant may propose, subject to EPA approval and in accordance with Section XI (EPA Approval of Plans and Other Submissions) of the Consent Decree, to use alternative language.

I. RECITALS

WITNESSETH:

WHEREAS, Grantor is the owner of real property located in the Municipality of Anchorage, Alaska, and legally described in ATTACHMENT A hereto (the "Property");

WHEREAS, the Property is part of the Standard Steel and Metals Salvage Yard Superfund Site ("Site") which the United States Environmental Protection Agency ("EPA") placed on the National Priorities List, 40 C.F.R. Part 300, as published in the Federal Register.

WHEREAS, in a Consent Decree by and between the United States of America and Settling Defendants and Owner Settling Defendant as those terms are defined in the Consent Decree, entered by the United States District Court of the District of Alaska on _____ _____, 1997 (the RD/RA Consent Decree), in the matter of United States v. Alaska Railroad Corporation, et al., A91-0589-CV (JWS), the Settling Defendants agreed to perform Remedial Design and Remedial Action at the Site and Owner Settling Defendant agreed to implement certain Institutional Controls and provide access to the Site set forth in the Consent Decree;

WHEREAS, the parties (Grantor and Grantee) have also agreed (a) to reserve to the Grantor a permanent right of access over the Property for the purpose of determining whether the Property is being used in a manner that is prohibited by the RD/RA Consent Decree or related agreements or easements; and (b) to impose on the Property use restrictions as covenants that the parties intend to run with the land and to be binding upon the successors, transferees and assigns of the Grantee; and

WHEREAS, Grantee intends to cooperate fully with Grantor, EPA and the Settling Defendants, in the implementation of all response actions at the Site.

II. ACCESS AGREEMENT.

Grantee agrees to provide to the U.S. EPA and any successor agency or department, the Alaska Department of Environmental Conservation and any successor (agency or department), and the Settling Defendants, access to the Property to the same extent and for the same purposes as Grantor agreed in Section VII of the Partial Consent Decree, entered on December 11, 1996 by the United States District Court for the District of Alaska in the matter of United States v. Alaska Railroad Corporation, et al., A91-0589-CV (JWS). Grantee also agrees and intends that this access obligation shall be binding on any subsequent successor, transferees, lessees, or person given interest in the Property and that it shall run with land comprising the Property.

III. RESTRICTIONS AND RESERVATIONS.

1. Purpose: It is the purpose of these restrictions and reservations to ensure that the Property will not be used in a manner that is prohibited by the RD/RA Consent Decree and to reserve and retain for the Grantor the right to access the Property for the purpose of determining that the use is not prohibited by the RD/RA Consent Decree.

2. Restrictions on Use: Grantee, on behalf of itself, its successors and assigns, in consideration of this [insert name of instrument] hereby covenants that use of the Property shall be restricted as follows:

(i) no residential use or activity shall be permitted on the property, and no commercial use or activity shall be permitted if it involves potential chronic exposures of children to soil (e.g., use of the property for a day care center);

(ii) no use or activity on the property shall be permitted that will disturb any of the remedial measures that have been implemented pursuant to this Consent Decree or that could potentially impair the integrity of the landfill in which contaminated soils and solidified soils have been disposed; and

(iii) except as necessary to perform the Remedial Action, no use or activity on the property shall disturb the surface or subsurface of the land by filling, drilling, excavation, or removal of topsoil, rock or minerals which could move soil containing greater than 1,000 mg/kg lead or 10 mg/kg polychlorinated biphenyl (PCB) to the

surface or within the top foot of soil where chronic long-term worker exposures could occur;

(iv) groundwater underlying the property shall not be consumed or used in any way except for the limited purpose of monitoring ground water contamination levels. Ground water wells and facilities installed for such purpose shall only be installed pursuant to a plan approved by EPA;

(v) access to the Toxics Substances Control Act landfill by the general public shall be prohibited, and access by long- or short-term workers shall be restricted in compliance with 40 C.F.R. § 761.75(b)(9)(i), through maintenance of a six-foot woven mesh fence, wall, or similar device. If the solidified soil mass is capped or designed and used as a building foundation or parking lot, EPA may waive this requirement upon a written request which shall include long-term maintenance of such cap, building foundation or parking lot in accordance with the approved O & M Plan. Unrestricted access by the general public to those areas of the Site where surface contamination of 1 mg/kg PCB or greater remains after all excavation, treatment, and disposal is complete shall be prohibited through maintenance of a six-foot fence, cap, parking lot or similar structure approved by EPA; and

(vi) during remedial design and construction of the remedial action, the public, including long and short-term workers, other than authorized representatives of EPA, the State, and Settling Defendants and Owner Settling Defendant, shall only have access to areas in or around the Site that are not affected by soil contamination.

(vii) At least 30 days prior to any conveyance of a title interest in the Property, the owner of the Property shall give to the grantee written notice of the RD/RA Consent Decree and of the access obligations and use restrictions therein and shall give written notice to EPA of the proposed conveyance, including the name and address of the Grantee, and the date on which notice of the RD/RA Consent Decree was given to the Grantee.

The parties intend these restrictions to run with the land and to be binding upon Grantee and its successors, transferees, and

assigns for the benefit of the Grantor, Alaska Railroad Corporation, its successors and assigns.

3. Reservation of Environmental Protection Easement: Grantor hereby reserves and retains for itself and its successors and assigns, a non-exclusive, perpetual easement to enter on the Property at reasonable times and in a reasonable manner. The purpose of such access is to verify that no action is being taken on the Property in violation of the terms of this easement.

4. No public access and Use: No right of access or use by the general public to any portion of the Property is intended by the parties or is conveyed by this [insert name of instrument].

5. Enforcement: The Grantor hereby reserves and retains for itself and its successors and assigns an irrevocable, permanent, and continuing right to enforce the terms of this [insert name of instrument] by resort to specific performance or legal process. All remedies available hereunder shall be in addition to any and all other remedies at law or in equity. Enforcement of the terms of this instrument shall be at the discretion of the Grantor, and any forbearance, delay or omission to exercise its rights under this instrument shall not be deemed to be a waiver by the Grantor or such term or any subsequent breach of the same or any other term, or of any of the rights of the Grantor under this [insert name of instrument].

6. Third Party Beneficiary: The Grantor, on behalf of itself and its successors and assigns, and the Grantee, on behalf of itself and its successors, transferees, and assigns, hereby agree that the EPA and Settling Defendants shall be third party beneficiaries of all the benefits and rights reserved and retained by the Grantor in this easement.

7. Waiver of Certain Defenses: Grantee and its successors, transferees, and assigns hereby waive any defense of laches, estoppel, or prescription.

8. Covenants: Grantor mutually covenants to and with the Grantee and its assigns that the Grantor has a good and lawful right and power to reserve and retain this [insert name of instrument].

9. Notices: Any notice, demand, request, consent, approval, or communication that either party desires or is required to give the other under this [insert name of instrument] shall be in writing and shall either be served personally or sent by first class mail, postage prepaid, addressed as follows:

To Grantor: To Grantee:

10. Controlling Law: The interpretation and performance of the Environmental Protection Easement, the Access Agreement, and Restrictions and Reservations shall be governed by the laws of the United States or, if there is no applicable federal law, by the law of the State of Alaska.

11. Liberal Construction: Any general rule of construction to the contrary notwithstanding, the Environmental Protection Easement, Access Agreement, and Restrictions and Reservations shall be liberally construed in favor of the restriction and reservations to effect the purpose of this [insert name of instrument] and the policy and purposes of CERCLA, 42 U.S.C. § 9601, et seq. If any provision of this [insert name of instrument] is found to be ambiguous, an interpretation consistent with the purpose of this [insert name of instrument] that would render the provision valid shall be favored over any interpretation that would render it invalid.

12. Severability: If any provision of this [insert name ofinstrument], or the application of it to any person or circumstance, is found to be invalid, the remainder of the provision of this [insert name of instrument], those sections, or the application of such provisions to persons or circumstances other than those to which it is found to be invalid, as the case may be, shall not be affected thereby.

13. Successors: The Grantor and Grantee intend that the covenants, terms, conditions, and restrictions of this [insert name of instrument] shall be binding upon, and inure to the benefit of, the parties hereto and their respective personal representatives, heirs, successors, and assigns and shall continue as a servitude running in perpetuity with the Property.

APPENDIX G

LEASE PROHIBITIONS

The following language, or such other language that EPA approves in writing pursuant to Section XI (EPA Approval of Plans and Other Submissions) of the Consent Decree, shall be included in any lease of Property described in Appendix C of the Consent Decree:

[Additional] Right of Access and Re-Entry]

[In addition to any right of access and/or re-entry described in this Lease], Lessor, the United States Environmental Protection Agency ("EPA"), the Alaska Department of Environmental Conservation ("ADEC"), and Settling Defendants, or their designees, shall have an irrevocable, permanent, and continuing right of access to the Property at reasonable times and in a reasonable manner for the purpose of implementing the Record of Decision for the Site issued by EPA on July 16, 1996 and determining whether the Property is being used in a manner that is prohibited by the Consent Decree between the United States of America and Settling Defendants and the Owner Settling Defendant, and entered by the United States District Court of the District of Alaska in the matter of, U.S. v. Alaska Railroad Corporation, et al., A91-0589-CV (JWS), entered by the court on _____ __ ___, 1997.

Access Agreement

Lessee hereby agrees to provide Lessor, EPA, ADEC, Settling Defendants, and their authorized representatives and agents, access at all reasonable times to the Property that is covered by this Lease for the implementation of the ROD and Consent Decree to the same extent as Lessor has agreed to provide access under Section VII (Site Access and Cooperation) of the Partial Consent Decree entered on December 11, 1966 by the United States District Court in the District of Alaska in the matter of United States v. Alaska Railroad Corporation, A01-0589-CV-(JWS).

Environmental Protection Requirement

Lessee hereby covenants and agrees that Lessee, its employees, representatives, and agents, [where such is allowed under the Lease, add one or more of the following: successors, assigns, sublessees, and subtenants] shall not use or allow any licensee, or any person given a right to use, occupy, or possess

any of the Property, in violation of any of the following restrictions:

(i) no residential use or activity shall be permitted on the property, and no commercial use or activity shall be permitted if it involves potential chronic exposures of children to soil (e.g., use of the property for a day care center);

(ii) no use or activity on the property shall be permitted that will disturb any of the remedial measures that have been implemented pursuant to this Consent Decree or that could potentially impair the integrity of the landfill in which contaminated soils and solidified soils have been disposed; and

(iii) except as necessary to perform the Remedial Action, no use or activity on the property shall disturb the surface or subsurface of the land by filling, drilling, excavation, or removal of topsoil, rock or minerals which could move soil containing greater than 1,000 mg/kg lead or 10 mg/kg polychlorinated biphenyl (PCB) to the surface or within the top foot of soil where chronic long-term worker exposures could occur;

(iv) groundwater underlying the property shall not be consumed or used in any way except for the limited purpose of monitoring ground water contamination levels. Ground water wells and facilities installed for such purpose shall only be installed pursuant to a plan approved by EPA;

(v) access to the Toxics Substances Control Act landfill by the general public shall be prohibited, and access by long- or short-term workers shall be restricted in compliance with 40 C.F.R. § 761.75(b)(9)(i), through maintenance of a six-foot woven mesh fence, wall, or similar device. If the solidified soil mass is capped or designed and used as a building foundation or parking lot, EPA may waive this requirement upon a written request which shall include long-term maintenance of such cap, building foundation or parking lot in accordance with the approved O & M Plan. Unrestricted access by the general public to those areas of the Site where surface contamination of 1 mg/kg PCB or greater remains after all excavation, treatment, and disposal is

complete shall be prohibited through maintenance of a six-foot fence, cap, parking lot or similar structure approved by EPA; and

(vi) during remedial design and construction of the remedial action, the public, including long and short-term workers, other than authorized representatives of EPA, the State, and Settling Defendants and Owner Settling Defendant, shall only have access to areas in or around the Site that are not affected by soil contamination.

Enforcement

The Lessee hereby covenants and agrees that the Lessor shall have continuing right to enforce the terms and conditions of the Right of Access and Re-entry and the Environmental Protection Requirement Sections of this lease by resort to specific performance or legal process, and that the Lessee's failure to satisfy the terms and conditions of such sections shall render this Lease void. All remedies available hereunder shall be in addition to any and all other remedies at law or in equity. Enforcement of the terms of this Lease shall be at the discretion of the Lessor, and any forbearance, delay or omission to exercise its rights under this Lease shall not be deemed to be a waiver by the Lessor of such term or any subsequent breach of the same or any other term, or of any of the rights of the Lessor under this lease.

[Notice Requirements]

[Where assignment, subleases, or subtenancies are allowed, add the following: At least 30 days prior to any [sublease, subtenancy, or conveyance] of an interest in the Property, Lessee shall give written notice of the Consent Decree to the [sublessee, subtenant, or grantee] and written notice to EPA of the proposed [sublease, subtenancy, or conveyance,] including the name and address of the [sublessee, subtenant, or grantee,] and the date on which notice of the Consent Decree was given.

Third Party Beneficiary

The Lessor and the Lessee hereby agree that the EPA and Settling Defendants shall be third party beneficiaries of all the benefits and rights reserved and retained by the Lessor in the Environmental Protection Requirement and Enforcement Section of this Lease.